MZ-E33

SERVICE MANUAL

E Model

Ver 1.0 1998. 10

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Model Name Using Similar Mechanism	MZ-E55
MD Mechanism Type	MT-MZE55-150
Optical Pick-up Mechanism Type	ODX-1A/1B

SPECIFICATIONS

System

Audio playing system
MiniDisc digital audio system

Laser diode properties
Material : GaAlAs
Wavelength : λ =790 nm
Emission duration : continuous

Laser output : less than 44.6 µW*

* This output is the value measured at a distance of 200 mm from the objective lens surface on the optical pick-up block with 7 mm aperture.

Revolutions
400 rpm to 900 rpm (CLV)

Error correction
Advanced Cross Interleave Reed Solomon Code (ACIRC)

Sampling frequency
44.1kHz

Coding
Adaptive TRansform Acoustic Coding (ATRAC)

Modulation system
EFM (Eight to Fourteen Modulation)

Number of channels
2 stereo channels
1 monaural channel

Frequency response
20 to 20,000 Hz ± 3 dB

Wow and Flutter
Below measurable limit

Outputs
Headphones : stereo mini-jack, maximum output level 5mW+5mW, load impedance 16 ohm

General

Power requirements
One LR6 (size AA) alkaline battery (not supplied)
Ni-MH rechargeable battery NH-9WM/NH-14WM (not supplied)
R-6 sized Ni-MH rechargeable battery NH-MDAA (supplied)
Sony AC Power Adaptor AC-MZR55 (supplied) connected at the DC IN 3V jack

Battery operation time

Batteries	Playback
LR6 (SG) (size AA) Sony alkaline battery	Approx. 9.5 hours
R-6 sized Ni-MH rechargeable battery NH-MDAA	Approx. 8 hours
Chewing gum type Ni-MH rechargeable battery NH-14WM	Approx. 7 hours
Chewing gum type Ni-MH rechargeable battery NH-9WM (N)	Approx. 6.5 hours

Dimensions
Approx. 80 × 17.3 × 92 mm (w/h/d)
(3 1/4 × 11/16 × 3 5/8 in.)
not including projecting parts and controls

– Continued on next page –

PORTABLE MINIDISC PLAYER

MICROFILM

SONY®

Mass

Approx. 113 g (4.0 oz.) the player only
Approx. 155 g (5.5 oz.) incl. a premastered MD and a Sony alkaline LR6 (SG) battery

Supplied accessories

AC power adaptor AC-MZR55 (1)
R-6 sized Ni-MH rechargeable battery NH-MDAA (1)
Rechargeable battery carrying case (1)
Headphones with a remote control MDR-E838SP + RM-MZE33 (1)
Carrying pouch (1)

Design and specifications are subject to change without notice.

This MiniDisc player is classified as a CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT label is located on the bottom exterior.

IN NO EVENT SHALL SELLER BE LIABLE FOR ANY DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE, OR LOSSES OR EXPENSES RESULTING FROM ANY DEFECTIVE PRODUCT OR THE USE OF ANY PRODUCT.

"MD WALKMAN" is a trademark of Sony Corporation.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION.
REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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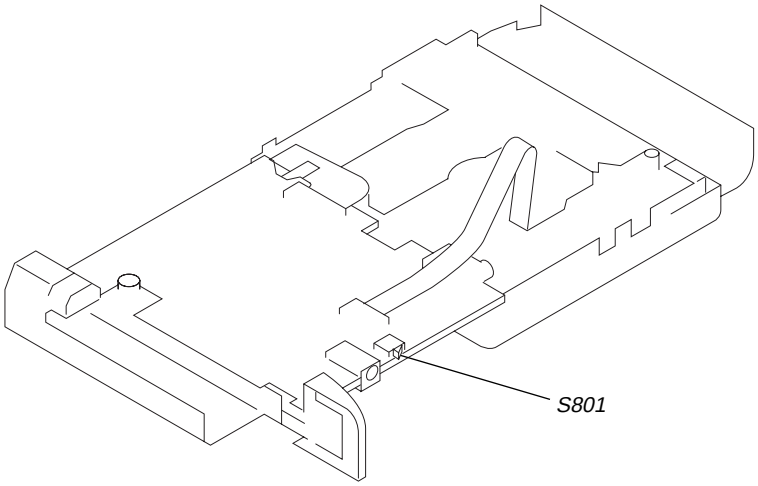
SECTION 1
SERVICING NOTE

1. When repairing this device with the power on, if you remove the main board, this device stops working. In this case, you work without the device stopping by fastening the hook of the DOOR OPEN/CLOSE switch (S801) with tape.



2. The electrical components differ according to the version of the system control IC (IC801). When replacing the IC801, check its model name and add or remove D1001 and/or R1001 as shown below. For detailed information, see the Printed Wiring Board on page 18 and the Schematic Diagram on page 21.
   RU6815MF-0003 (Ver. 2.0) .... Add D1001
   RU6815MF-0004 (Ver. 3.0) .... Add D1001 and R1001
   RU6815MF-0005 (Ver. 3.2) and later .... Remove D1001 and R1001

This section is extracted from instruction manual.

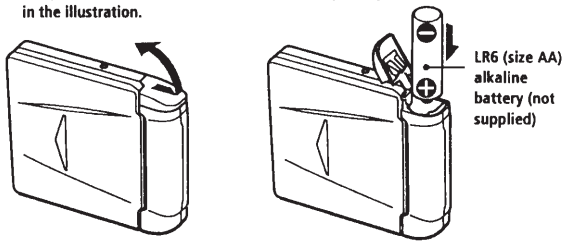
Playing an MD right away! A

Prepare one LR6 (size AA) alkaline battery. You can also use this player on a rechargeable batteries or house current (see "Power sources"). Playback will switch automatically between stereo and monaural according to the sound source.

1 Insert a battery or a rechargeable battery.

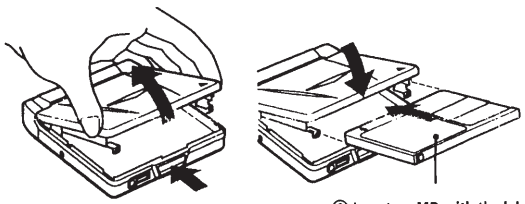
① Slide open the battery compartment lid as shown in the illustration.

② Insert the battery with correct polarity.



Charge rechargeable batteries before using them (see "Using on a rechargeable battery").

2 Insert an MD.



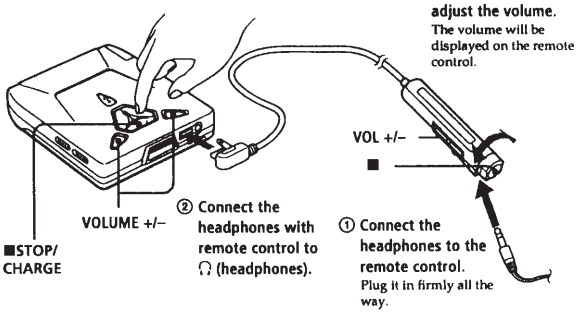
① Push OPEN and open the lid.

② Insert an MD with the label facing up and press the lid down to close.

3 Play an MD.

③ Press ►•▶▶I (turn the control to ►•▶▶I on the remote control).
The player starts to play the first track.
When using the remote control, a short beep sounds in the headphones. The OPR/CHG lamp on the main unit will light up.

④ Press VOLUME +/– (VOL +/– on the remote control) to adjust the volume.
The volume will be displayed on the remote control.


VOL +/–
■
VOLUME +/–
■STOP/ CHARGE
② Connect the headphones with remote control to ∩ (headphones).
① Connect the headphones to the remote control.
Plug it in firmly all the way.

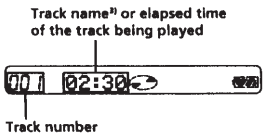
To stop play, press ■.
When using the remote control, a short beep sounds in the headphones.
The OPR/CHG lamp on the main unit will go off. The display on the remote control will disappear after a while.

To	Press (Beeps in the headphones)
Pause	II on the remote control (Continuous short beeps) Press II again to resume play.
Find the beginning of the current track	I◄◄ or turn the control to I◄◄ on the remote control once (Three short beeps)
Find the beginning of the next track	►•▶▶I or turn the control to ►•▶▶I on the remote control once (Two short beeps)
Go backwards while playing[1]	keep pressing I◄◄ or keep the control turned to I◄◄ on the remote control
Go forward while playing[1]	keep pressing ►•▶▶I or keep the control turned to ►•▶▶I on the remote control
Remove the MD	■ and push OPEN to open the lid.[2]

When using the headphones
Wear the "L" marked side to the left ear and the "R" marked side to the right ear.

If playback does not start
Make sure the player is not locked. See "To lock the controls."

Display window while playing back



Tips
- The OPR/CHG lamp will light up on the main unit during playback. It will go off when ■ is pressed.
- The display on the remote control will disappear after a few seconds after you have pressed ■.

Note
Do not push OPEN during playback. If you do, the lid opens and playback will stop.

When using optional headphones
Use the headphones that have stereo-miniplug. You cannot use other types of headphones (microplug).

1) If you press I◄◄ or ►•▶▶I during pause, the player will resume playback. If you keep pressing I◄◄ or ►•▶▶I during pause (keep the control turned to I◄◄ or ►•▶▶I on the remote control), you can fast forward/rewind without listening to the playback sound.
2) Once you open the lid, the point to start play will change to the beginning of the first track.
3) Appears only with MDs that have been electronically labeled.

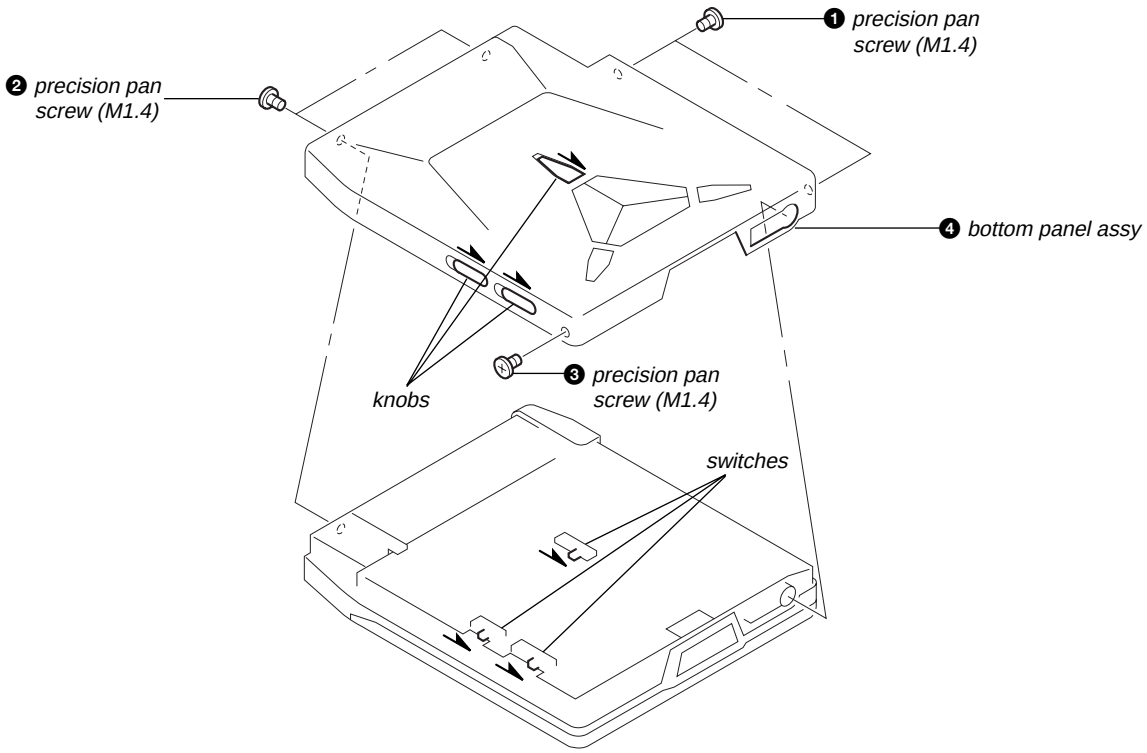
SECTION 3
DISASSEMBLY

• The equipment can be removed using the following procedure.
Bottom panel assy ➡ Main board
Upper panel assy ➡ Main board ➡ MD assy ➡ OP service assy

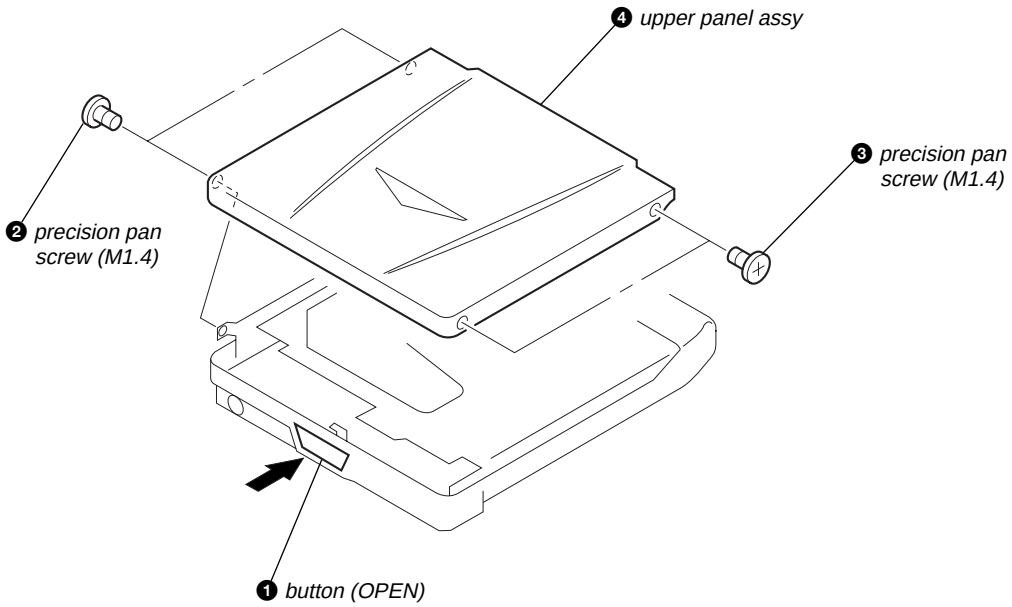
Note : Follow the disassembly procedure in the numerical order given.

3-1. BOTTOM PANEL ASSY

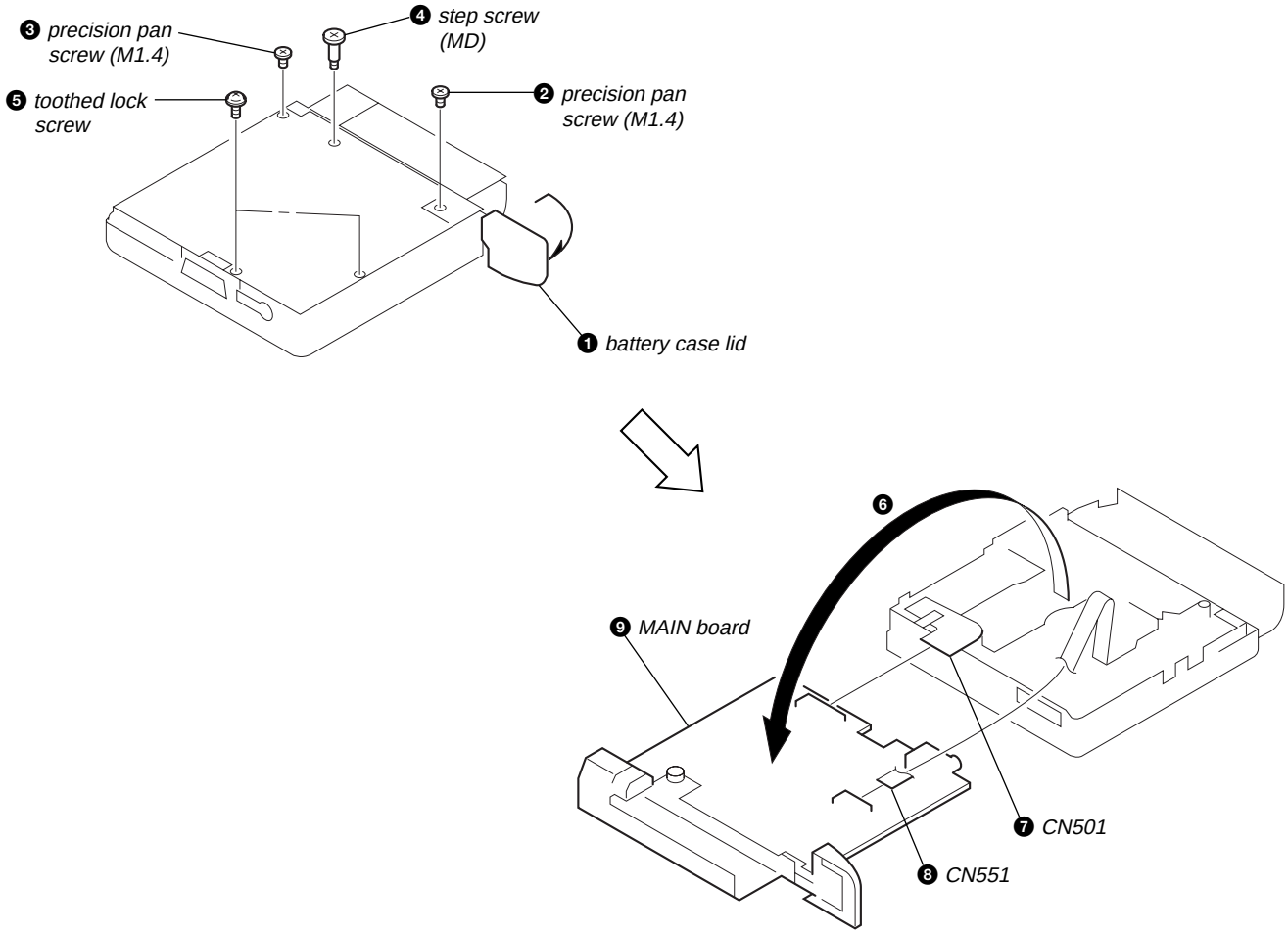
Note : When installing, fit the knobs and switches.



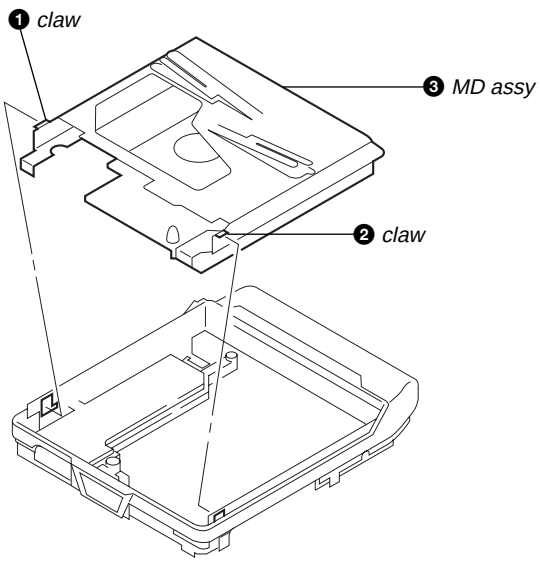
3-2. UPPER PANEL ASSY



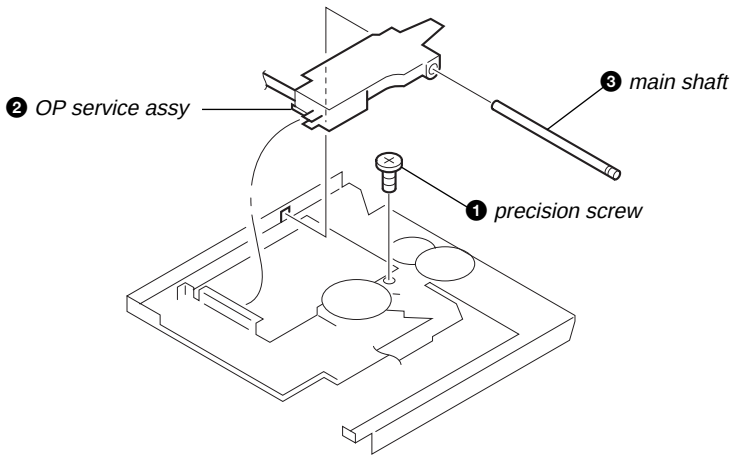
3-3. MAIN BOARD



3-4. MD ASSY



3-5. OP SERVICE ASSY



SECTION 4
TEST MODE

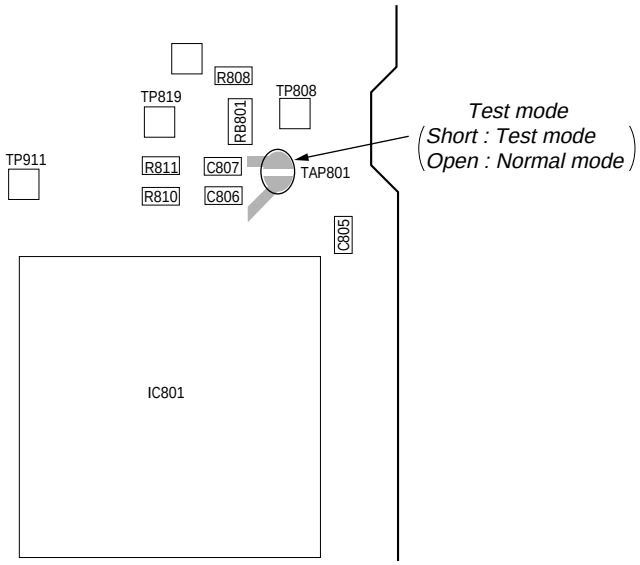
Outline

- In this set, overall adjustment mode is made available by entering test mode to perform automatic adjustment of CD and MO. In the overall adjustment mode, the disc is determined whether it is CD or MO and adjustments are performed in sequence. If a fault is found, the location of the fault is displayed. Also, in service mode, each adjustment can be automatically made.

Setting the Test Mode

To enter the test mode, two methods are available:

1. Entering method with key input.
   Turn off the HOLD switch on the set. While holding down the ■ key on the set, press the following remote commander keys in the following order:
   ▶▶| → ▶▶| → |◀◀ → |◀◀ → ▶▶| → |◀◀ → ▶▶| → |◀◀ → II → II
2. Entering method by shorting the test point
   Solder bridge the test point TAP801 (TEST) on the main board (connect IC801 pin ⑫ to GND), and turn on the POWER.

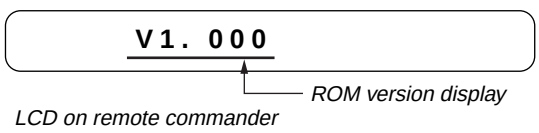


Releasing the Test Mode

1. When test mode was entered with key input, turn off the POWER.
2. When test mode was entered by shorting the test point, turn off the POWER and open the solder bridge of TAP801 (TEST MODE) on the main board.

Operation of Setting on Test Mode

When the test mode is set, the LCD displays the following:

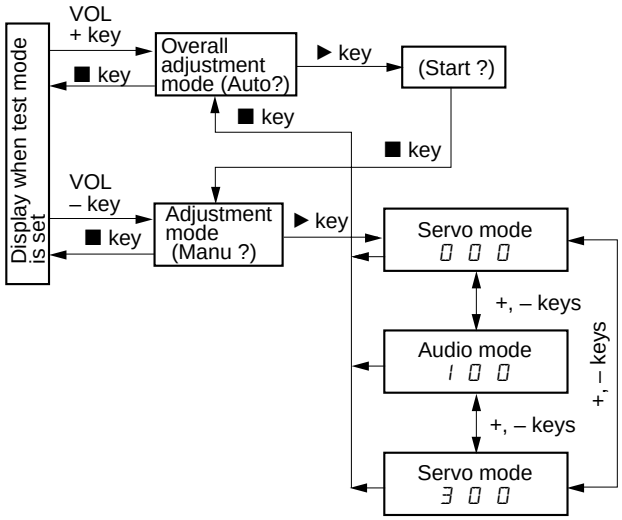


LCD on remote commander

- The cycle - the above ROM version display → All lit → All off - is repeated.
  (The ROM version is constantly displayed.)
- When the PLAY MODE key is pressed and held down, the display at that time is held so that display can be checked.

Configuration of Test Mode

The test mode has the configuration given below.

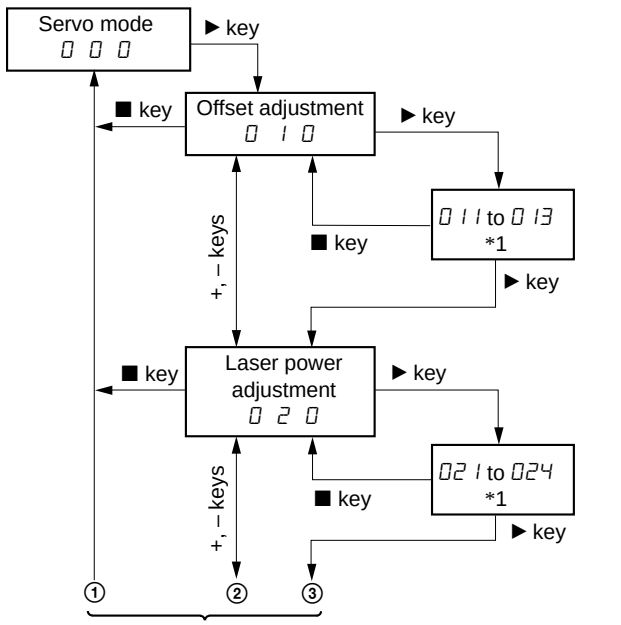


Displays of the LCD on the remote commander are shown in parentheses.

Servo Mode

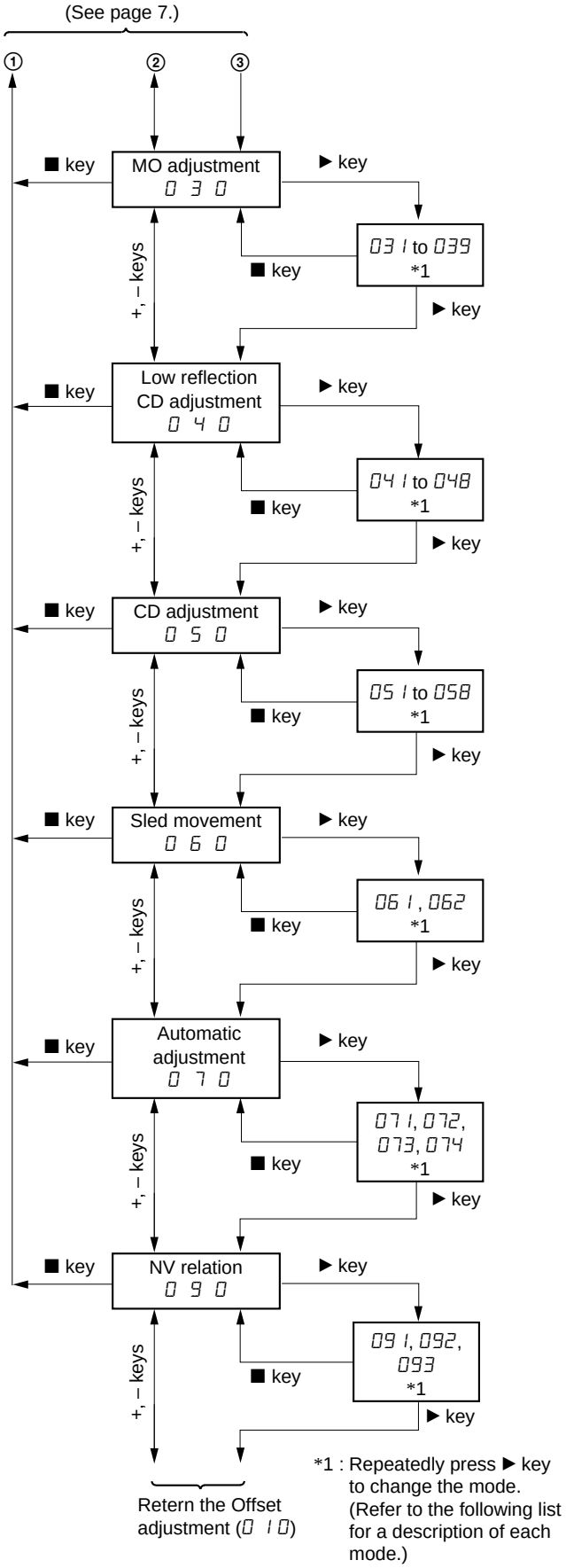
- Set the test mode, press the VOL – key and use the ▶ key to set the servo mode.
- When the servo mode is set, use the ▶▶| key and the |◀◀ key to move the optical pick-up to the outer circumference and to the inner circumference respectively.
- When entering another mode, refer to the configuration of test mode.

1. Structure of Servo Mode



(See page 8)

*1 Repeatedly press ▶ key to change the mode. (Refer to the following list for a description of each mode.)



2. Description of Each Mode

010 Offset adjustment

Mode	Description
011	FE offset
012	TE offset
013	All servo ON

020 Laser power adjustment

Mode	Description
021	MO power A
022	MO power E
023	CDL power
024	CD power

030 MO adjustment

Mode	Description
031	MO FE balance
032	MO FE gain
033	MO ABCD gain
034	MO focus gain
035	MO tracking gain
036	MO RF gain
037	MO ADIP gain
038	MO focus bias E
039	CD focus bias A

040 Lower reflection CD adjustment

Mode	Description
041	Lower reflection CD FE balance
042	Lower reflection CD FE gain
043	Lower reflection CD ABCD gain
044	Lower reflection CD focus gain
045	Lower reflection CD tracking gain
046	Lower reflection CD RF offset
047	Lower reflection CD RF gain
048	Lower reflection CD focus bias

050 CD adjustment

Mode	Description
051	CD FE balance
052	CD FE gain
053	CD ABCD gain
054	CD focus gain
055	CD tracking gain
056	CD RF offset
057	CD RF gain
058	CD focus bias

060 Sled movement

Mode	Description
061	Sled in
062	Sled out 5

070 Automatic adjustment

Mode	Description
071	Focus search
072	Access 32
073	ADER check
074	Tracking sensitivity adjust

090 NV relation

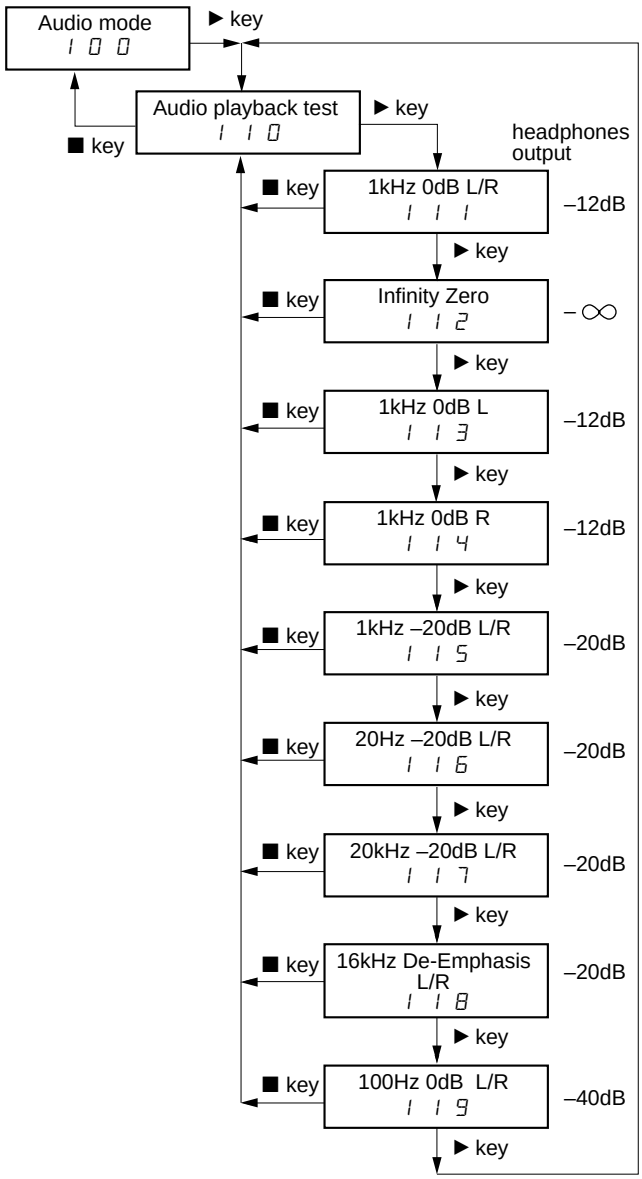
Mode	Description
091	NV clear
092	Power OFF
093	Function code change

Audio Mode

- Enter the test mode and press the VOL – key. Then, press the ▶ key and the VOL + key in this turn to enter audio mode.
- When entering another mode, refer to the configuration of test mode.

1. Structure of Audio Mode

- The mode No. 111 is for S/N and crosstalk. The mode No. 115 is for distortion factor and frequency characteristics.

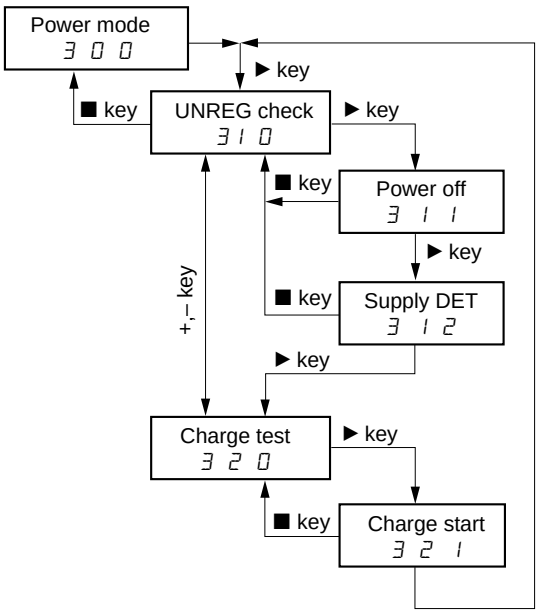


- When the VOL +/– keys is pressed in any mode, the volume of the headphones is changed (increased/decreased) in units of one step. When the ▶▶|/|◀◀ keys is pressed, the volume of the headphones is maximized/minimized.
- For the volume value, any changed value remains as it is basically.
  However, when the volume is switched from 114 to 115 or 118 to 119, it returns the default value.

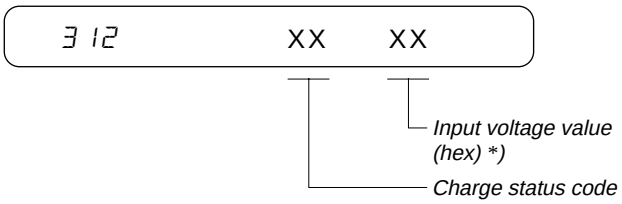
Power Mode

- Enter the test mode and press the VOL – key. Then, press the ▶ key and the VOL – key in this turn to enter power mode.
- When entering another mode, refer to the configuration of test mode.

1. Power Mode Structure



- Press the ■ key to disconnect the power in mode No. 311.
- To display power information in mode No. 312.



*) Input voltage value = Display voltage value (hex) divided by 256 and multiplied by 9.016
Example:
With display of 50 (hex), 50 (hex) = 80 (dec)
Input voltage = 80 divided by 256 and multiplied by 9.016
= 2.8175 V

Charge status code (second digit)

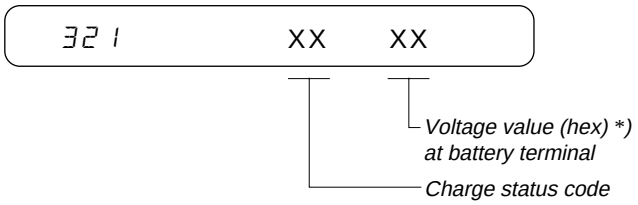
Code	Description
0	Unable to charge (No adaptor attached, or no power if present)
8	Chargeable *1)
A	Servo system stopped/chargeable *1)

*1) Chargeable: AC adaptor attached and AA battery available, or AC adaptor attached and gum type battery available.

Charge status code (first digit)

Code	Description
1	Gum type battery not detected (AA battery available or no battery)
2	Description Gum type battery detected
4	AC adaptor detected
5	Gum type battery not detected/AC adaptor detected
6	Gum type battery detected/AC adaptor detected

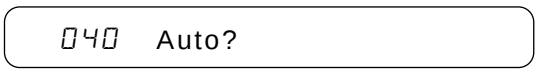
- When in mode No. 321, the system automatically tries to detect the AC adaptor and the battery. If chargeable, it starts charging. (No charge display and no LED flashing during this mode.)



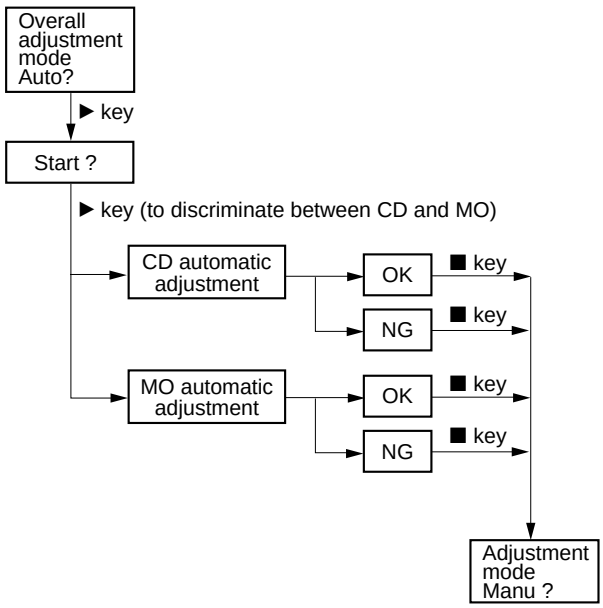
*) Battery terminal voltage = Display voltage value (hex) divided by 256 and multiplied by 2.8
Example:
With display of A0 (hex), A0 (hex) = 160 (dec)
Terminal voltage = 160 divided by 256 and multiplied by 2.8
= 1.75 V

Overall Adjustment Mode

- Enter the test mode and press the VOL + key to enter overall adjustment mode.
- When entering another mode, refer to the configuration of test mode.
- When the overall adjustment mode is entered, the LCD on the remote commander display the following:



1. Structure of Overall Adjustment Mode



SECTION 5
ELECTRICAL ADJUSTMENTS

Notes for Adjustment

- In this set, automatic adjustment of CD and MO can be performed by entering the test mode.
- Adjustments are performed in the overall adjustment mode. If an item is determined as NG, the item is readjusted in servo mode.

Adjustment Method in Overall Adjustment Mode

1. Enter the test mode and press the VOL + key to enter overall adjustment mode.
2. Insert the test CD (TGYS-1) or SONY MO disk (recorded) commercially available.
3. Press the ▶ key twice. The disc is determined whether it is CD or MO and each adjustment mode is set. Automatic adjustments are performed in the order of the items listed below.

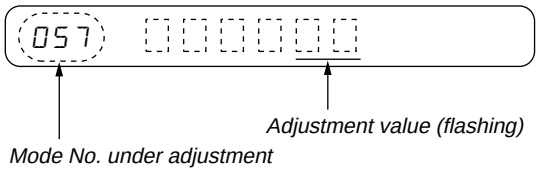
- In CD Automatic Adjustment Mode

No.	Mode	Description
1	061	Sled in
2	071	Focus search
3	062	Sled out 5
4	051	CD FE balance
5	052	CD FE gain
6	051	CD FE balance
7	053	CD ABCD gain
8	054	CD focus gain
9	055	CD tracking gain
10	056	CD RF offset
11	057	CD RF gain
12	056	CD RF offset
13	058	CD Focus bias

- In MO Automatic Adjustment Mode

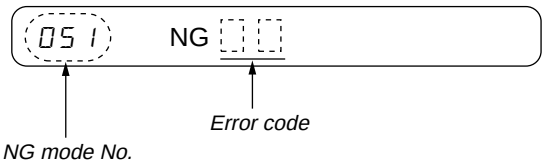
No.	Mode	Description
1	061	Sled in
2	071	Focus search
3	062	Sled out
4	031	MO FE balance
5	032	MO FE gain
6	031	MO FE balance
7	033	MO ABCD gain
8	034	MO focus gain
9	035	MO tracking gain
10	036	MO RF gain
11	037	MO ADIP gain
12	039	MO focus bias A
13	073	ADER check
14	071	Focus search
15	031	MO FE balance
16	032	MO FE gain
17	031	MO FE balance
18	033	MO ABCD gain
19	034	MO focus gain
20	035	MO tracking gain
21	036	MO RF gain
22	037	MO ADIP gain
23	039	MO focus bias A
24	073	ADER check
25	061	Sled in
26	071	Focus search
27	041	Low reflection CD FE balance
28	042	Low reflection CD FE gain
29	041	Low reflection CD FE balance
30	043	Low reflection CD ABCD gain
31	044	Low reflection CD focus gain
32	045	Low reflection CD tracking gain
33	046	Low reflection CD RF offset
34	047	Low reflection CD RF gain
35	061	Sled in
36	071	Focus search
37	041	Low reflection CD FE balance
38	042	Low reflection CD FE gain
39	041	Low reflection CD FE balance
40	043	Low reflection CD ABCD gain
41	044	Low reflection CD focus gain
42	045	Low reflection CD tracking gain
43	046	Low reflection CD RF offset
44	047	Low reflection CD RF gain

* Remote commander display during automatic adjustment



4. If result of automatic adjustment is OK, the following display appears.

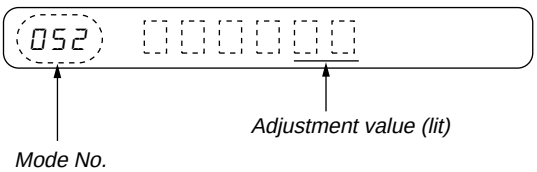
5. If result of automatic adjustment is NG, the following display appears.



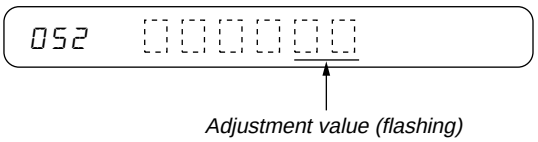
* If NG, enter servo mode to perform automatic adjustment of the item determined as NG.

Adjustment in Servo Mode Method

1. When each adjustment mode is set according to the structure of servo mode, the lower two digits of the mode No. and the adjustment value written in EEPROM are displayed and lit on the LCD on the remote commander .

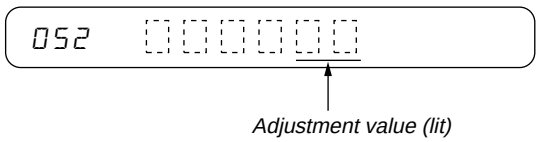


2. When the ▮▮ key is pressed, the following display appears and the automatic adjustment is performed.



Note) Although the VOL +/– keys can be used to change the adjustment value to any value, they should not be used whenever possible.

3. When the automatic adjustment is completed, the flashing adjustment value is lit.



SECTION 6
DIAGRAMS

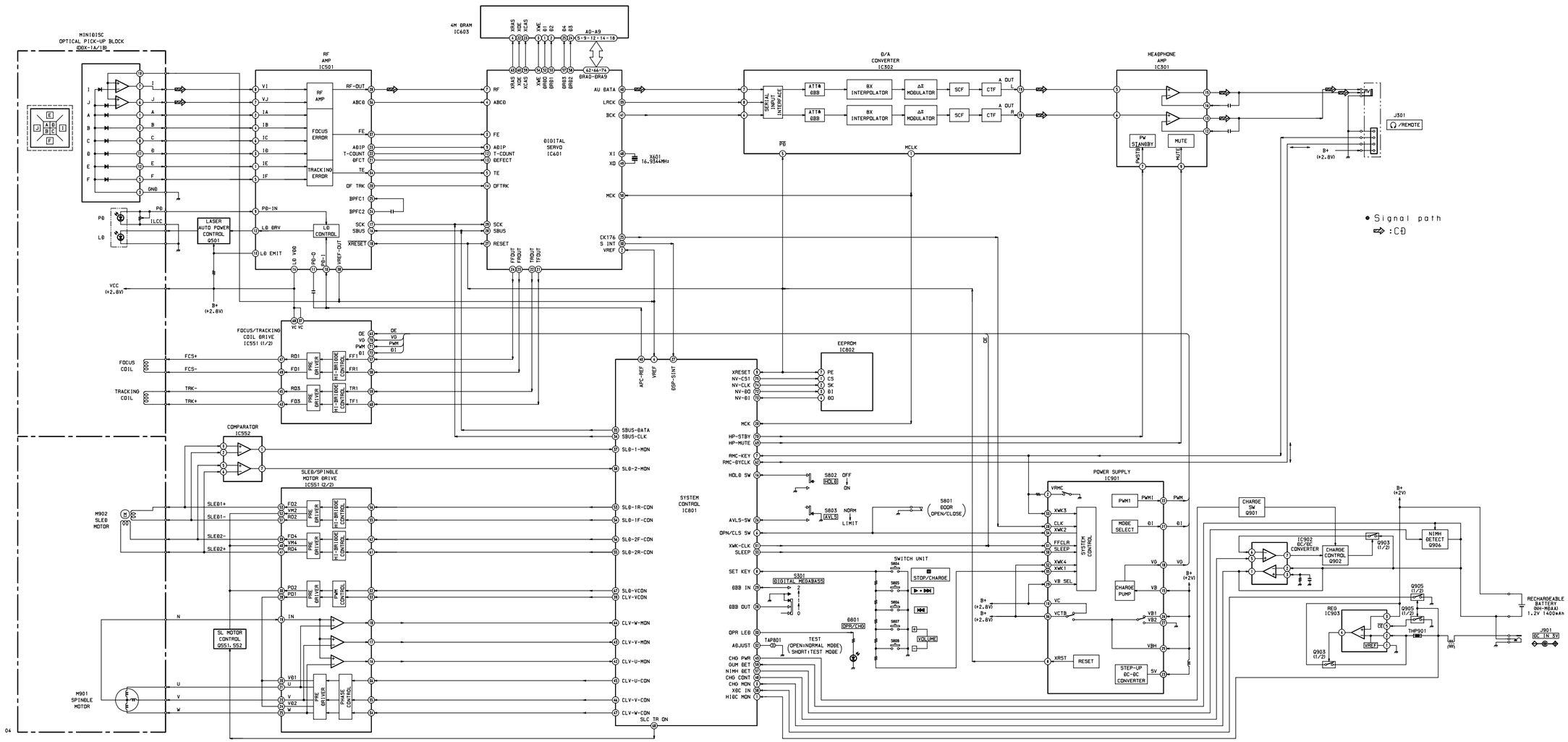
6-1. IC PIN DESCRIPTION

• IC801 RU6815MF-0004 (SYSTEM CONTROL)

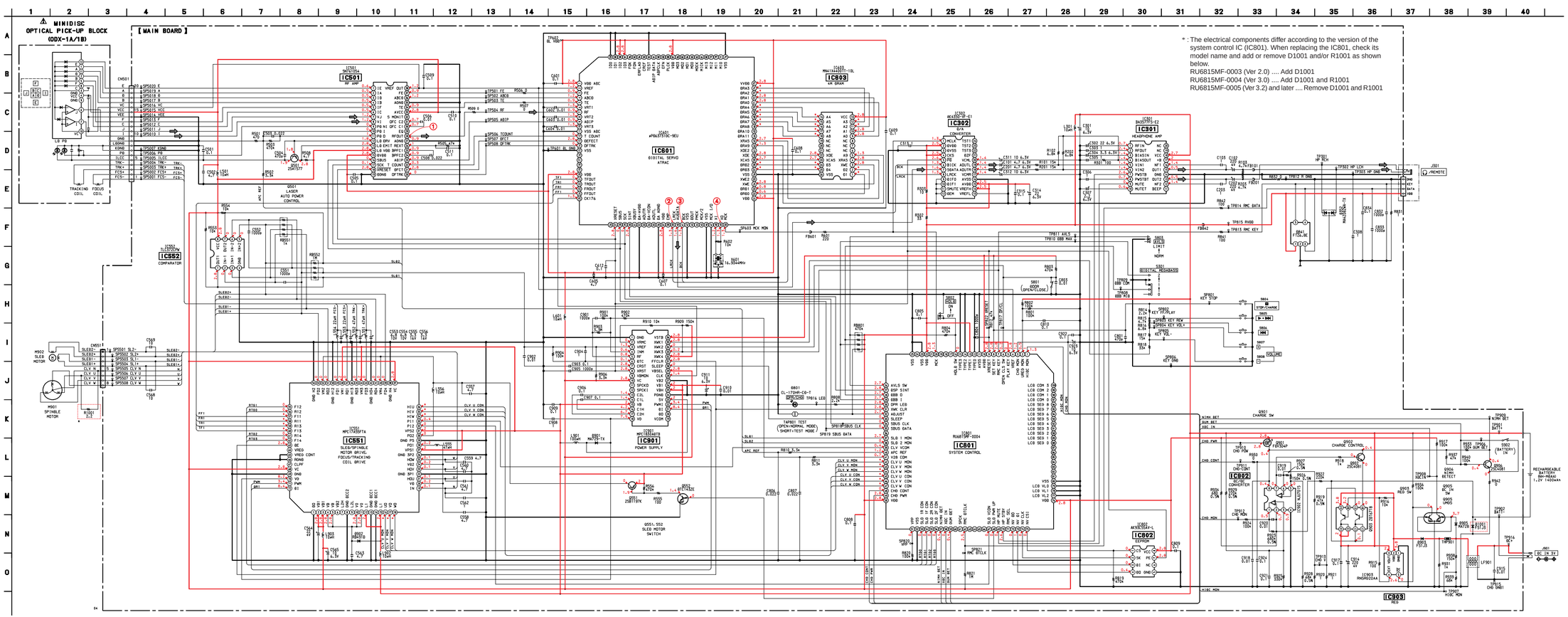
Pin No.	Pin Name	I/O	Pin Description
1	HIDC MON	I	HIDC voltage monitor input.
2	UREG MON	I	Unreg voltage monitor input.
3	CHG MON	I	CHG voltage monitor input.
4	VREF	I	Reference voltage for power supply voltage adjustlment.
5	PLAY KEY	I	Set PLAY key input.
6	OPEN CLS SW	I	DOOR OPEN/CLOSE switch input. L : Close
7	RMC KEY	I	Remote commander key input.
8	SET KEY	I	Set key input.
9	XRESET	I	Systen reset input (At reset : “L”).
10	AVDD	—	A/D converter power supply (+2.8V).
11	AVSS	—	A/D converter Ground.
12	TYPE 0	I	Model discrimination terminal (Fixed at “L”).
13	TYPE 1	I	Model discrimination terminal (Fixed at “H”).
14	TYPE 2	I	Model discrimination terminal (Fixed at “L”).
15	TYPE 3	I	Model discrimination terminal (Fixed at “L”).
16	HOLD SW	I	Set HOLD switch input.
17	VREG CON	O	2.5V voltage on/off switch (Sub terminal) (not used).
18		—	Not used (Open).
19		—	Not used (Open).
20	MCK	I	Master clock input.
21		—	Not used (Open).
22	VDD	—	Digital power supply (+2.8V).
23	VSS	—	Digital Ground.
24		—	Not used (Open).
25	VSS	—	Digital Ground.
26	AVLS SW	I	Set AVLS switch input.
27	DSP SINT	I	Interrupt input from DSP.
28	DBB 0	I	DIGITAL MEGABASS switch input (MID).
29	DBB 1	O	DIGITAL MEGABASS switch input (MAX).
30	OPR LED	O	LED drive output.
31	XWK CLR	O	Power IC wakeup factor latch clear output and motor driver IC control signal outpt.
32	ADJUST	I	“Normally” Test mode select input (“L” : Test mode)
33	SLEEP	O	Power supply circuit OFF signal output.
34	SBUS CLK	O	SBB serial clock output.
35	SBUS DATA	O	SBB serial data output.
36		—	Not used (Open).
37	SLD 1 MON	I	Sled servo timing signal input.
38	SLD 2 MON	I	Sled servo timing signal input.
39	CLV VCON	O	Spindle servo drive voltage control output.
40	APC REF	O	Laser power control output.
41	V28-CON	O	Power voltage (+2.8V) correction control output.
42	CLV U MON	I	Spindle servo timing signal input.
43	CLV V MON	I	Spindle servo timing signal input.
44	CLV W MON	I	Spindle servo timing signal input.
45	CLV U CON	O	Spindle servo drive signal output.
46	CLV V CON	O	Spindle servo drive signal output.
47	CLV W CON	O	Spindle servo drive signal output.

Pin No.	Pin Name	I/O	Pin Description
48	CHG CONT	O	CHG control signal output.
49	CHG PWR	O	CHG power supply voltage control signal output.
50	VDD	—	Digital power supply (+2.8V).
51	VPP	—	Power for on board light.
52	VSS	—	Digital ground.
53	SLD 1R CON	O	Sled motor control signal output.
54	SLD 1F CON	O	Sled motor control signal output.
55	SLD 2R CON	O	Sled motor control signal output.
56	SLD 2F CON	O	Sled motor control signal output.
57	NIMH DET	I	NIMH detect signal input.
58	XDC IN	I	Power supply voltage input sense signal input.
59	GUM DET	I	Battery detect signal input.
60		—	Not used (Open).
61	SPCK	O	Serial clock output for Remote control communication. Not used (Open).
62	RMC DTCLK	I/O	Serial data input/output for Remote control communication.
63 – 66		—	Not used (Open).
67	SLD VCON	O	Sled servo outer voltage control output.
68	SLD PWR-UP	O	Baypass transistor control output for sled drive power supply.
69	HP MUTE	O	Headphone amplifier mute output.
70	HP STBY	O	Headphone amplifier standby output.
71	RMC SEL	O	TSB/SSB selection signal output to remote commander terminal. Not used (Open).
72	NV D0	O	Serial data signal output for NVRAM.
73	NV D1	I	Serial data signal input from NVRAM.
74	NV CLK	O	Serial clock signal output for NVRAM.
75	NV CS1	O	Chip select signal output for NVRAM.
76	VDD	—	Digital power supply (+2.8V).
77 – 79	LCD VL2 – 0	I	LCD drive level power supply (Connected ground).
80	VSS	—	Digital ground.
81 – 87		—	Not used (Open).
88 – 96	LCD SEG0 – 8	—	LCD Segment terminal. Not used (Open).
97 – 100	LCD COM0 – 3	—	LCD common terminal. Not used (Open).

6-2. BLOCK DIAGRAM



6-4. SCHEMATIC DIAGRAM • Refer to page 25 for IC Block Diagrams.


MINIDISC
OPTICAL PICK-UP BLOCK
(ODX-1A/1B)
【MAIN BOARD】
IC501
IC552
IC551
IC601
IC603
IC302
IC801
IC802
IC803
IC901
IC807
* : The electrical components differ according to the version of the system control IC (IC801). When replacing the IC801, check its model name and add or remove D1001 and/or R1001 as shown below.
RU6815MF-0003 (Ver 2.0) .... Add D1001
RU6815MF-0004 (Ver 3.0) .... Add D1001 and R1001
RU6815MF-0005 (Ver 3.2) and later .... Remove D1001 and R1001

• **Waveforms** (MODE:PLAY)

① IC501 (28) VOLT/DIV : 200mV AC, TIME/DIV : 5 µsec — 800mVp-p

② IC601 (39) VOLT/DIV : 1V AC, TIME/DIV : 10 µsec — 2.7Vp-p, 23 µsec

③ IC601 (41) VOLT/DIV : 500mV AC, TIME/DIV : 200nsec — 2.6Vp-p, 482nsec

④ IC601 (48) VOLT/DIV : 500mV AC, TIME/DIV : 20nsec — 2.0 Vp-p, 16.9344 MHz

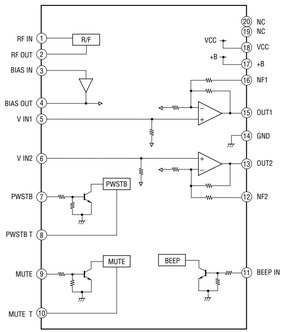
Note:
- All capacitors are in µF unless otherwise noted. pF: µµF
  50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

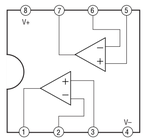
- ▬▬ : B+ Line.
- Power voltage is dc 3 V and fed with regulated dc power supply from battery terminal.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark : MD PLAY
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : MD

• IC Block Diagrams

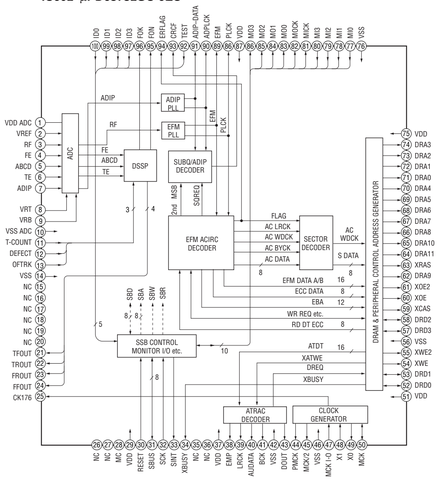
IC301 BA3577FS-E2



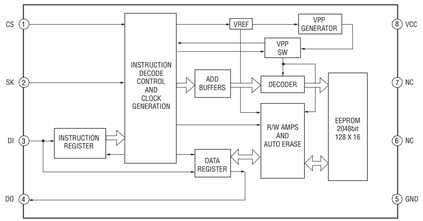
IC552 TLC372CPWR



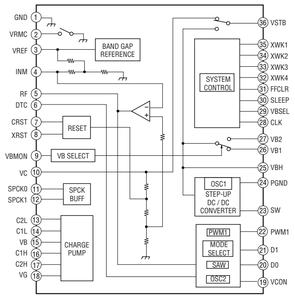
IC601 μPD63731GC-9EU



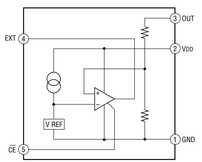
IC802 AK93C55AV-L



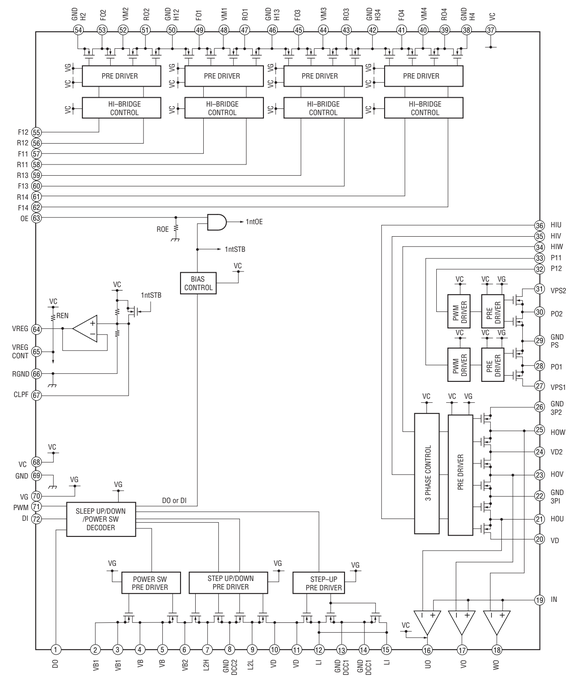
IC901 MPC1830ADTBEL



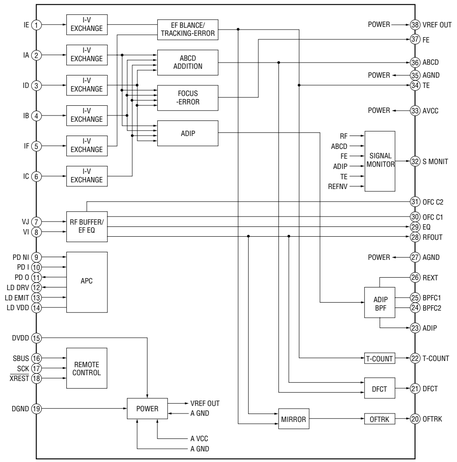
IC903 RN5RG20AA-TL



IC551 MPC17A55FTA



IC501 SN761054

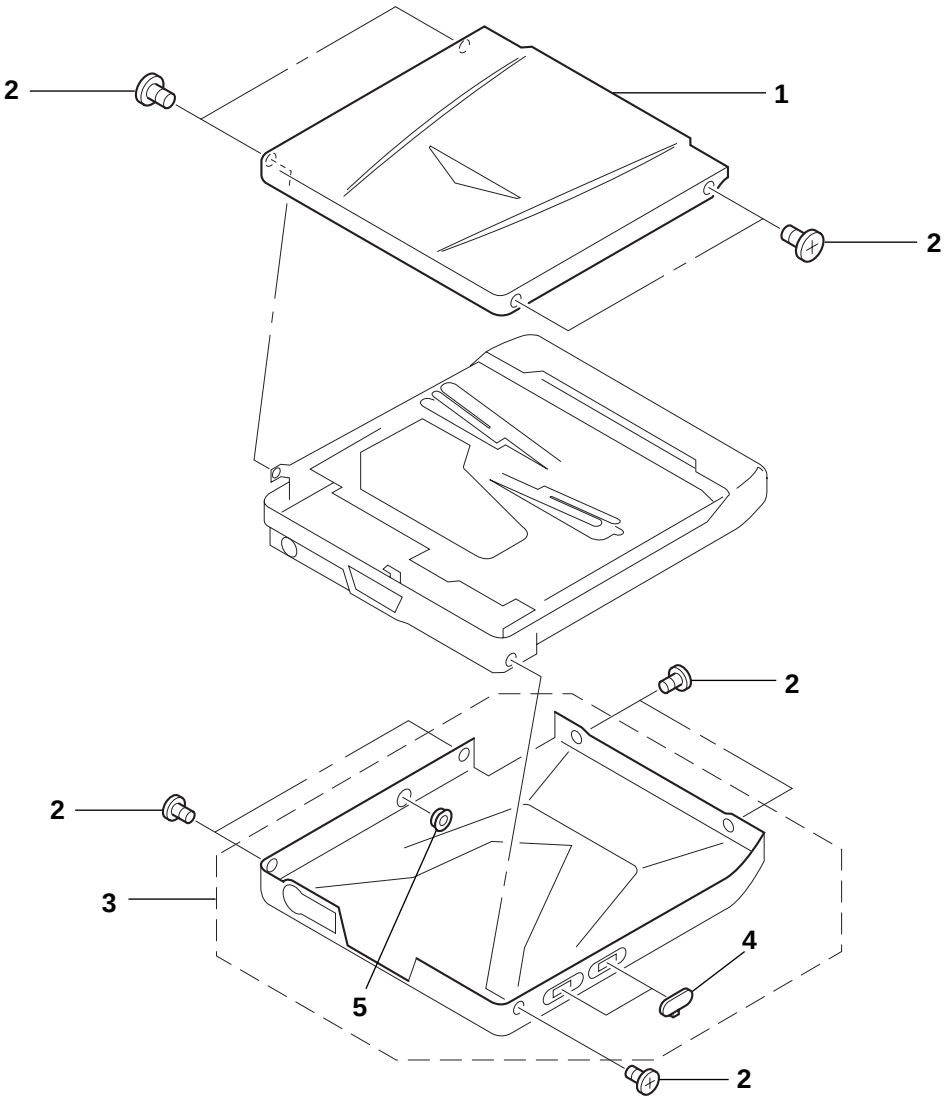


SECTION 7
EXPLODED VIEWS

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE) ... (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Accessories and packing materials are given in the last of this parts list.

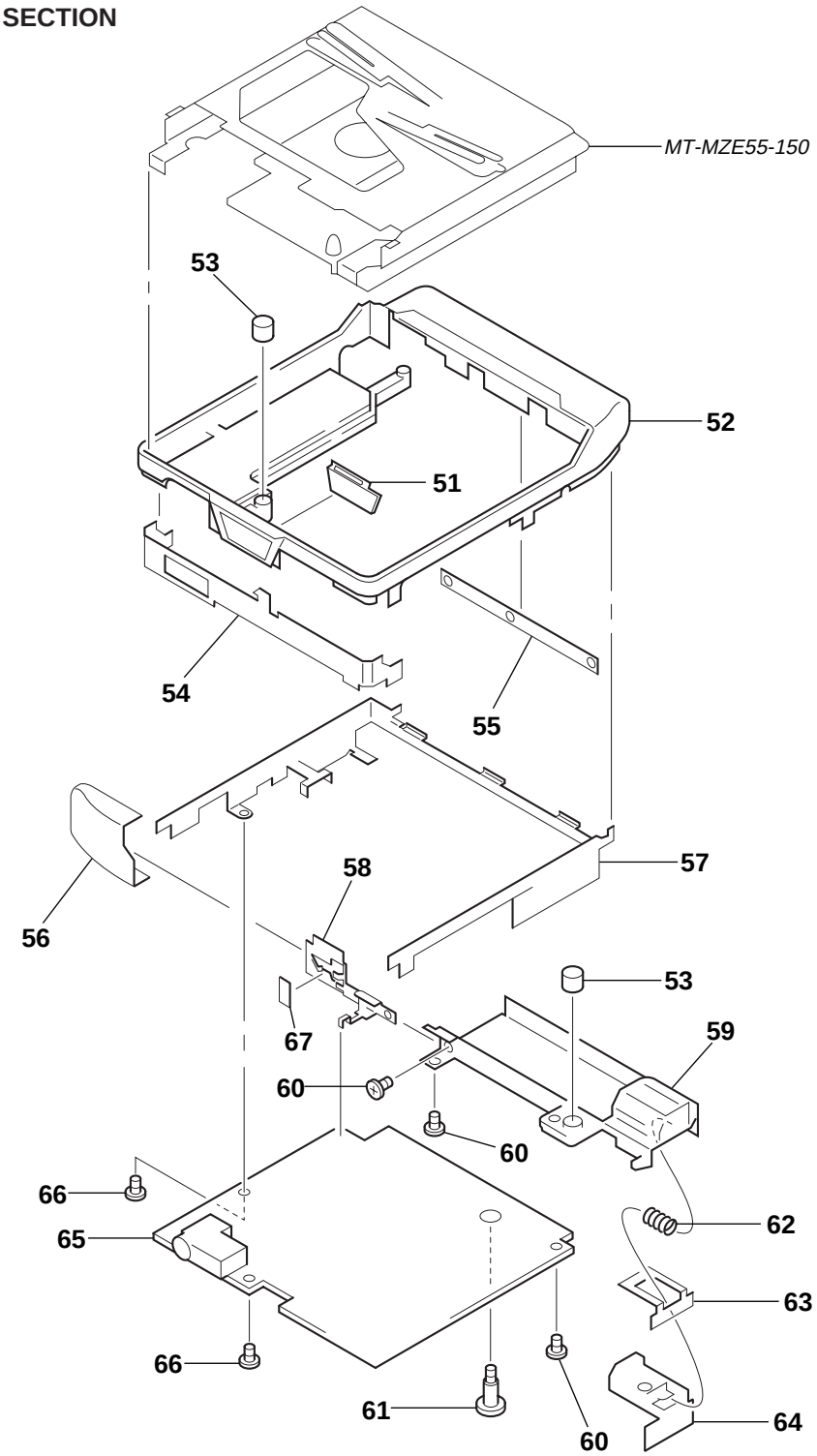
The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety.
Replace only with part number specified.

7-1. PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	X-4950-595-1	PANEL SUB ASSY, UPPER (B) (BLACK)	
1	X-4950-596-1	PANEL SUB ASSY, UPPER (N) (GOLD)	
1	X-4950-597-1	PANEL SUB ASSY, UPPER (L) (BLUE)	
2	4-963-883-21	SCREW (M1.4), PRECISION PAN (GOLD,BLUE)	
2	4-963-883-32	SCREW (M1.4), PRECISION PAN (BLACK)	
3	X-4950-598-1	PANEL SUB ASSY, LOWER (B) (BLACK)	
3	X-4950-599-1	PANEL SUB ASSY, LOWER (N) (GOLD)	
3	X-4950-600-1	PANEL SUB ASSY, LOWER (L) (BLUE)	
4	3-939-835-01	KNOB (DIGITAL MEGABASS, AVLS)	
5	3-010-287-01	COLLAR (DC IN 3V)	

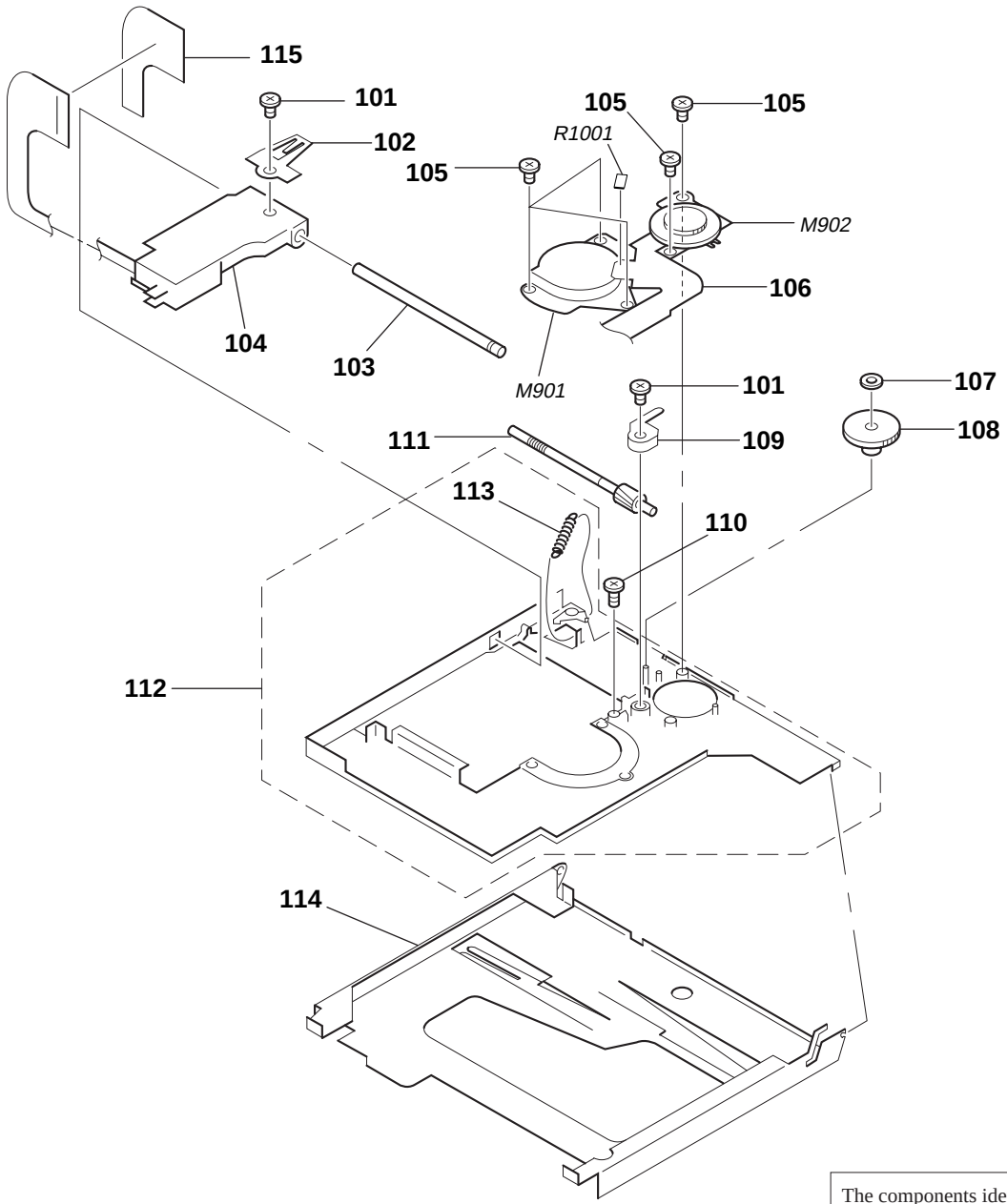
7-2. MAIN BOARD SECTION



Ref. No.	Part No.	Description	Remark
51	4-212-361-01	BUTTON (OPEN)	
52	X-4950-429-1	STRIP ASSY (B), ORNAMENTAL (BLACK)	
52	X-4950-503-1	STRIP ASSY (N), ORNAMENTAL (GOLD)	
52	X-4950-504-1	STRIP ASSY (L), ORNAMENTAL (BLUE)	
53	4-982-418-01	DAMPER	
54	X-4950-350-1	BRACKET (A) ASSY	
* 55	4-212-363-01	BRACKET (C)	
56	4-212-364-01	LID, BATTERY CASE (BLACK)	
56	4-212-364-11	LID, BATTERY CASE (GOLD)	
56	4-212-364-21	LID, BATTERY CASE (BLUE)	
57	X-4950-351-1	BRACKET (B) ASSY	

Ref. No.	Part No.	Description	Remark
58	X-4950-354-1	TERMINAL ASSY, BATTERY	
59	4-212-366-01	CASE, BATTERY	
60	4-963-883-21	SCREW (M1.4), PRECISION PAN	
61	4-994-886-01	SCREW (MD), STEP	
62	4-214-232-01	SPRING (BATTERY), COMPRESSION	
63	4-212-369-01	TERMINAL PLATE (PLUS)	
64	4-212-367-01	HOLDER (TERMINAL PLATE)	
* 65	A-3323-069-A	MAIN BOARD, COMPLETE	
66	3-335-797-01	SCREW (M1.4X2), TOOTHED LOCK	
67	3-315-454-01	SPACER (E)	

7-3. MECHANISM DECK SECTION (MT-MZE55-150)



The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
101	4-963-883-61	SCREW (M1.4), PRECISION PAN	
102	4-982-561-11	SPRING, RACK	
103	4-214-478-01	SHAFT, MAIN	
⚠104	X-4949-164-1	SERVICE ASSY, OP	
105	4-963-883-21	SCREW (M1.4), PRECISION PAN	
106	1-670-707-11	CLV FLEXIBLE BOARD	
107	4-965-893-01	WASHER, GEAR (A) STOPPER	
108	4-982-555-01	GEAR (A)	
109	4-212-899-01	SPRING, THRUST	
110	3-349-825-82	SCREW, PRECISION	
111	X-4948-793-1	REED ASSY	
112	X-4950-414-1	CHASSIS ASSY	
113	4-986-811-01	SPRING (EJECT), TENSION	
114	4-212-896-01	HOLDER	
115	4-214-207-01	SHEET (OP)	
M901	8-835-594-01	MOTOR, DC SSM-01C03A/J-S (SPINDLE)	
M902	1-698-764-21	MOTOR, SLED (INCLUDING GEAR)	
R1001	1-216-789-11	METAL CHIP 2.2K 5% 1/16W	

MAIN

SECTION 8
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ, for example:
  uA.. : μA.. uPA.. : μPA..
  uPB.. : μPB.. uPC.. : μPC.. uPD.. : μPD..
- CAPACITORS
  uF : μF
- COILS
  uH : μH

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-3323-069-A	MAIN BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C102	1-125-899-11	TANTAL. CHIP	220uF	20%	4V
C103	1-115-156-11	CERAMIC CHIP	1uF		10V
C201	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C202	1-125-899-11	TANTAL. CHIP	220uF	20%	4V
C203	1-115-156-11	CERAMIC CHIP	1uF		10V
C301	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C302	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C303	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C304	1-127-690-21	TANTAL. CHIP	3.3uF	20%	6.3V
C305	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C306	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C307	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C308	1-115-156-11	CERAMIC CHIP	1uF		10V
C311	1-127-688-21	TANTAL. CHIP	10uF	20%	6.3V
C312	1-127-688-21	TANTAL. CHIP	10uF	20%	6.3V
C313	1-115-156-11	CERAMIC CHIP	1uF		10V
C314	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C315	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C501	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C502	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C503	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C504	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C505	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C506	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C508	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C509	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C510	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C511	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C551	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C552	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C553	1-127-689-21	TANTAL. CHIP	6.8uF	20%	10V
C554	1-127-689-21	TANTAL. CHIP	6.8uF	20%	10V
C555	1-127-691-21	TANTAL. CHIP	3.3uF	20%	16V
C556	1-127-691-21	TANTAL. CHIP	3.3uF	20%	16V
C557	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C558	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C559	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C560	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C561	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V

Ref. No.	Part No.	Description			Remark
C562	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C563	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C564	1-117-232-11	TANTALUM	22uF	20%	4V
C565	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C568	1-117-370-11	CERAMIC CHIP	10uF		10V
C569	1-117-370-11	CERAMIC CHIP	10uF		10V
C601	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C602	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C603	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C604	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C605	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C607	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C608	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C609	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C612	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C801	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C803	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C804	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C805	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C806	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C807	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C808	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C809	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C810	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C832	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C833	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C834	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C901	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C902	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C903	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C904	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C905	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C906	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C907	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C908	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C909	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C910	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C911	1-127-688-21	TANTAL. CHIP	10uF	20%	6.3V
C914	1-125-899-11	TANTAL. CHIP	220uF	20%	4V
C915	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C917	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C918	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C919	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C920	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C921	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V

Ref. No.	Part No.	Description			Remark
C922	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C923	1-127-688-21	TANTAL. CHIP	10uF	20%	6.3V
C924	1-164-156-11	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
CN501	1-573-360-21	CONNECTOR, FFC/FPC 20P			
* CN551	1-785-218-21	CONNECTOR, FPC (ZIF) 8P			
		< DIODE >			
D352	8-719-045-87	DIODE MA4Z082WA-TX			
D801	8-719-051-01	LED CL-170HR-CD-T (OPR/CHG)			
D841	8-719-066-17	DIODE FTZ6.8E-T148			
D901	8-719-420-51	DIODE MA729			
D902	8-719-066-16	DIODE RB491D-T146			
D903	8-719-072-26	DIODE FS1J3-TP			
D905	8-719-421-27	DIODE MA728			
D1001	8-719-072-26	DIODE FS1J3-TP			
		< FERRITE BEAD >			
FB101	1-414-760-21	FERRITE (SMD), EMI			
FB201	1-414-760-21	FERRITE (SMD), EMI			
FB601	1-414-760-21	FERRITE (SMD), EMI			
FB842	1-414-228-11	FERRITE BEAD INDUCTOR			
		< IC >			
IC301	8-759-431-56	IC BA3577FS-E2			
IC302	8-759-541-32	IC AK4350-VF-E1			
IC501	8-759-538-56	IC SN761054			
IC551	8-759-390-25	IC MPC17A55FTA			
IC552	8-759-358-40	IC TLC372CPWR			
IC601	8-759-538-55	IC uPD63731GC-9EU			
IC603	8-759-565-50	IC MN41X4400TT-10TIL			
IC801	8-759-564-20	IC RU6815MF-0004			
IC802	8-759-449-23	IC AK93C55AV-L			
IC901	8-759-538-57	IC MPC1830ADTBEL			
IC902	8-759-559-89	IC NJU7015R-TE2			
IC903	8-759-460-35	IC RN5RG20AA-TL			
		< JACK >			
J301	1-778-368-11	JACK, HEADPHONE (🎧 /REMOTE)			
J901	1-779-080-11	JACK, DC (POLARITY UNIFIED TYPE)			(DC IN 3V)
		< COIL >			
L301	1-414-754-11	INDUCTOR	10uH		
L501	1-414-754-11	INDUCTOR	10uH		
L551	1-412-031-11	INDUCTOR CHIP	47uH		
L552	1-412-031-11	INDUCTOR CHIP	47uH		
L553	1-414-400-11	INDUCTOR	22uH		
L554	1-414-400-11	INDUCTOR	22uH		
L555	1-412-031-11	INDUCTOR CHIP	47uH		
L556	1-414-410-21	INDUCTOR	10uH		
L601	1-414-754-11	INDUCTOR	10uH		
L901	1-412-032-11	INDUCTOR CHIP	100uH		

Ref. No.	Part No.	Description			Remark
L902	1-416-668-11	CHOKE COIL	10uH		
L903	1-414-410-21	INDUCTOR	10uH		
		< FILTER >			
LF901	1-416-405-21	FILTER, CHIP EMI (COMMON MODE)			
		< TRANSISTOR >			
Q501	8-729-922-10	TRANSISTOR 2SA1577-QR			
Q551	8-729-904-87	TRANSISTOR 2SB1197K-R			
Q552	8-729-929-11	TRANSISTOR DTC143ZE-TL			
Q901	8-729-046-49	FET FDV304P			
Q902	8-729-905-35	TRANSISTOR 2SC4081-R			
Q903	8-729-046-44	TRANSISTOR ZDT6718TA			
Q905	8-729-929-67	TRANSISTOR UMG5-TL			
Q906	8-729-905-35	TRANSISTOR 2SC4081-R			
		< RESISTOR >			
R101	1-216-835-11	METAL CHIP	15K	5%	1/16W
R102	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R103	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R201	1-216-835-11	METAL CHIP	15K	5%	1/16W
R202	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R203	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R301	1-216-809-11	METAL CHIP	100	5%	1/16W
R302	1-216-803-11	METAL CHIP	33	5%	1/16W
R303	1-216-797-11	METAL CHIP	10	5%	1/16W
R501	1-216-817-11	METAL CHIP	470	5%	1/16W
R502	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R503	1-216-853-11	METAL CHIP	470K	5%	1/16W
R505	1-216-841-11	METAL CHIP	47K	5%	1/16W
R506	1-216-864-11	METAL CHIP	0	5%	1/16W
R507	1-216-864-11	METAL CHIP	0	5%	1/16W
R508	1-216-793-11	RES,CHIP	4.7	5%	1/16W
R509	1-216-864-11	METAL CHIP	0	5%	1/16W
R553	1-216-833-11	METAL CHIP	10K	5%	1/16W
R554	1-216-833-11	METAL CHIP	10K	5%	1/16W
R555	1-216-809-11	METAL CHIP	100	5%	1/16W
R556	1-216-853-11	METAL CHIP	470K	5%	1/16W
R601	1-216-813-11	METAL CHIP	220	5%	1/16W
R602	1-216-833-11	METAL CHIP	10K	5%	1/16W
R801	1-216-845-11	METAL CHIP	100K	5%	1/16W
R802	1-216-845-11	METAL CHIP	100K	5%	1/16W
R803	1-216-853-11	METAL CHIP	470K	5%	1/16W
R804	1-216-853-11	METAL CHIP	470K	5%	1/16W
R808	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R810	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R811	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R812	1-216-841-11	METAL CHIP	47K	5%	1/16W
R814	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R815	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R816	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R817	1-216-835-11	METAL CHIP	15K	5%	1/16W

MAIN

Ref. No.	Part No.	Description			Remark
R818	1-216-839-11	METAL CHIP	33K	5%	1/16W
R819	1-216-853-11	METAL CHIP	470K	5%	1/16W
R820	1-216-845-11	METAL CHIP	100K	5%	1/16W
R821	1-216-857-11	METAL CHIP	1M	5%	1/16W
R831	1-216-864-11	METAL CHIP	0	5%	1/16W
R832	1-216-864-11	METAL CHIP	0	5%	1/16W
R841	1-216-809-11	METAL CHIP	100	5%	1/16W
R842	1-216-809-11	METAL CHIP	100	5%	1/16W
R901	1-216-845-11	METAL CHIP	100K	5%	1/16W
R902	1-216-853-11	METAL CHIP	470K	5%	1/16W
R903	1-216-863-11	RES,CHIP	3.3M	5%	1/16W
R904	1-216-845-11	METAL CHIP	100K	5%	1/16W
R906	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R909	1-216-847-11	METAL CHIP	150K	5%	1/16W
R910	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R915	1-216-809-11	METAL CHIP	100	5%	1/16W
R916	1-216-833-11	METAL CHIP	10K	5%	1/16W
R917	1-216-845-11	METAL CHIP	100K	5%	1/16W
R918	1-216-821-11	METAL CHIP	1K	5%	1/16W
R919	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R920	1-217-671-11	METAL CHIP	1	5%	1/10W
R921	1-217-671-11	METAL CHIP	1	5%	1/10W
R922	1-216-849-11	METAL CHIP	220K	5%	1/16W
R923	1-218-915-11	RES,CHIP	680K	0.50%	1/16W
R924	1-216-845-11	METAL CHIP	100K	5%	1/16W
R925	1-216-851-11	METAL CHIP	330K	5%	1/16W
R926	1-218-899-11	RES,CHIP	150K	0.50%	1/16W
R927	1-218-899-11	RES,CHIP	150K	0.50%	1/16W
R928	1-218-891-11	RES,CHIP	68K	0.50%	1/16W
R929	1-218-903-11	RES,CHIP	220K	0.50%	1/16W
R930	1-216-864-11	METAL CHIP	0	5%	1/16W
R931	1-216-821-11	METAL CHIP	1K	5%	1/16W
R933	1-216-845-11	METAL CHIP	100K	5%	1/16W
R934	1-218-915-11	RES,CHIP	680K	0.50%	1/16W
R936	1-216-845-11	METAL CHIP	100K	5%	1/16W
R937	1-216-841-11	METAL CHIP	47K	5%	1/16W
R938	1-216-847-11	METAL CHIP	150K	5%	1/16W
R939	1-216-843-11	METAL CHIP	68K	5%	1/16W
R940	1-216-845-11	METAL CHIP	100K	5%	1/16W
R942	1-216-864-11	METAL CHIP	0	5%	1/16W

< NETWORK RESISTOR >

RB551	1-233-961-11	RES, NETWORK (CHIP TYPE)	1K
RB552	1-233-979-11	RES, NETWORK (CHIP TYPE)	1M
RB801	1-233-977-11	RES, NETWORK (CHIP TYPE)	470K

< SWITCH >

S301	1-762-079-11	SWITCH, SLIDE (DIGITAL MEGABASS)
S801	1-771-326-11	SWITCH, PUSH LEVER (1 KEY) (DOOR OPEN/CLOSE)
S802	1-762-078-11	SWITCH, SLIDE (HOLD)
S803	1-762-078-11	SWITCH, SLIDE (AVLS)
S804	1-771-053-21	SWITCH, KEY BOARD (■ STOP/CHARGE)
S805	1-771-053-21	SWITCH, KEY BOARD (► ▶▶I)
S806	1-771-053-21	SWITCH, KEY BOARD (I◀◀)
S807	1-771-053-21	SWITCH, KEY BOARD (VOLUME +)
S808	1-771-053-21	SWITCH, KEY BOARD (VOLUME -)
S902	1-771-483-21	SWITCH, PUSH (1 KEY) (BATTERY IN DET)

< THERMISTOR (POSITIVE) >

THP901	1-771-075-21	THERMISTOR, POSITIVE

< VIBRATOR >

X601	1-767-621-11	VIBRATOR, CERAMIC (16.9344MHz)

****

MISCELLANEOUS

****

⚠104	X-4949-164-1	SERVICE ASSY, OP			
106	1-670-707-11	CLV FLEXIBLE BOARD			
M901	8-835-594-01	MOTOR, DC SSM-01C03A/J-S (SPINDLE)			
M902	1-698-764-21	MOTOR, SLED (INCLUDING GEAR)			
R1001	1-216-789-11	METAL CHIP	2.2	5%	1/16W

****

ACCESSORIES & PACKING MATERIALS

****

⚠	1-418-049-11	ADAPTOR, AC (AC-MZR55)
	1-475-831-61	REMOTE CONTROL UNIT (RM-MZE33)
	1-528-947-11	BATTERY PACK (NH-MDAA)
	3-864-830-61	MANUAL, INSTRUCTION (ENGLISH,CHINESE)
	4-972-888-01	CASE, CARRYING
	8-953-218-90	HEADPHONE MDR-E838SP//K SET

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.

98J0470084-1
Printed in Singapore ©1998. 10
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(Shibaura)

MZ-E33

SERVICE MANUAL

Ver 1.1 1999. 01

US Model
Canadian Model
AEP Model
E Model

US and foreign patents licensed from Dolby Laboratories Licensing Corporation.

Model Name Using Similar Mechanism	MZ-E55
MD Mechanism Type	MT-MZE55-150
Optical Pick-up Mechanism Type	ODX-1A/1B

SPECIFICATIONS

System

Audio playing system
MiniDisc digital audio system
Laser diode properties
Material : GaAlAs
Wavelength : λ =790 nm
Emission duration : continuous
Laser output : less than 44.6 µW*
* This output is the value measured at a distance of 200 mm from the objective lens surface on the optical pick-up block with 7 mm aperture.
Revolutions
400 rpm to 900 rpm (CLV)
Error correction
Advanced Cross Interleave Reed Solomon Code (ACIRC)
Sampling frequency
44.1kHz
Coding
Adaptive TRansform Acoustic Coding (ATRAC)
Modulation system
EFM (Eight to Fourteen Modulation)
Number of channels
2 stereo channels
1 monaural channel
Frequency response
20 to 20,000 Hz ± 3 dB
Wow and Flutter
Below measurable limit
Outputs
Headphones : stereo mini-jack, maximum output level 5mW+5mW, load impedance 16 ohm

General

Power requirements
One LR6 (size AA) alkaline battery (not supplied)
Ni-MH rechargeable battery NH-9WM/NH-14WM (not supplied)
R-6 sized Ni-MH rechargeable battery NH-MDAA (supplied)
Sony AC Power Adaptor AC-MZR55 (supplied) connected at the DC IN 3V jack
Battery operation time

Batteries	Playback
LR6 (SG) (size AA) Sony alkaline battery	Approx. 9.5 hours
R-6 sized Ni-MH rechargeable battery NH-MDAA	Approx. 8 hours
Chewing gum type Ni-MH rechargeable battery NH-14WM	Approx. 7 hours
Chewing gum type Ni-MH rechargeable battery NH-9WM (N)	Approx. 6.5 hours

Dimensions
Approx. 80 × 17.3 × 92 mm (w/h/d)
(3 1/4 × 11/16 × 3 5/8 in.)
not including projecting parts and controls

– Continued on next page –

PORTABLE MINIDISC PLAYER

MICROFILM

SONY®

Mass

Approx. 113 g (4.0 oz.) the player only
Approx. 155 g (5.5 oz.) incl. a premastered MD and a Sony alkaline LR6 (SG) battery

Supplied accessories

AC power adaptor AC-MZR55 (1)
R-6 sized Ni-MH rechargeable battery NH-MDAA (1)
Rechargeable battery carrying case (1)
Headphones with a remote control
MDR-A34SP + RM-MZE33 (1) (US model)
MDR-E805SP + RM-MZE33 (1) (Canadian, AEP, E model)
MDR-E838SP + RM-MZE33 (1) (Hong Kong model)
Carrying pouch (1)

Design and specifications are subject to change without notice.

This MiniDisc player is classified as a CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT label is located on the bottom exterior.

IN NO EVENT SHALL SELLER BE LIABLE FOR ANY DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE, OR LOSSES OR EXPENSES RESULTING FROM ANY DEFECTIVE PRODUCT OR THE USE OF ANY PRODUCT.

"MD WALKMAN" is a trademark of Sony Corporation.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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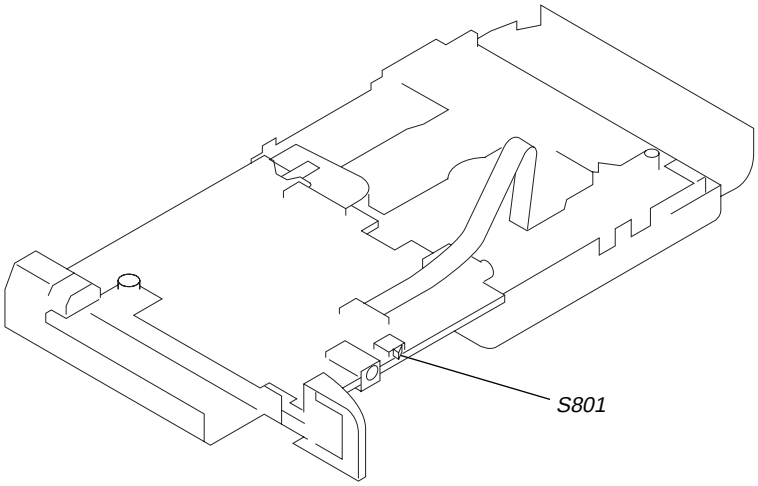
ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SECTION 1
SERVICING NOTE

1. When repairing this device with the power on, if you remove the main board, this device stops working.
   In this case, you work without the device stopping by fastening the hook of the DOOR OPEN/CLOSE switch (S801) with tape.



2. The electrical components differ according to the version of the system control IC (IC801). When replacing the IC801, check its model name and add or remove D1001 and/or R1001 as shown below. For detailed information, see the Printed Wiring Board on page 18 and the Schematic Diagram on page 21.
   RU6815MF-0004 (Ver. 3.0) .... Add D1001 and R1001
   RU6815MF-0005 (Ver. 3.2) and later .... Remove D1001 and R1001

This section is extracted from instruction manual.

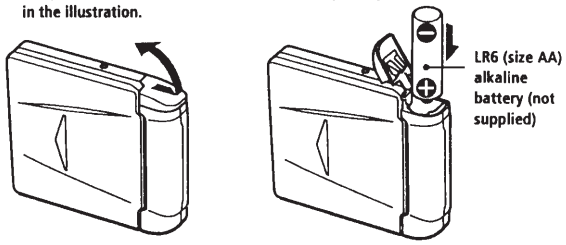
Playing an MD right away! A

Prepare one LR6 (size AA) alkaline battery. You can also use this player on a rechargeable batteries or house current (see "Power sources"). Playback will switch automatically between stereo and monaural according to the sound source.

1 Insert a battery or a rechargeable battery.

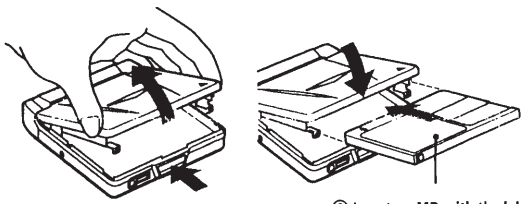
① Slide open the battery compartment lid as shown in the illustration.

② Insert the battery with correct polarity.



Charge rechargeable batteries before using them (see "Using on a rechargeable battery").

2 Insert an MD.



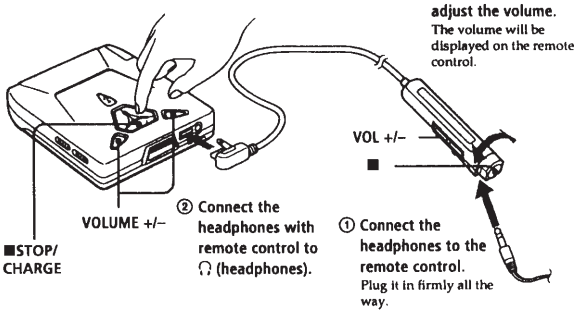
① Push OPEN and open the lid.

② Insert an MD with the label facing up and press the lid down to close.

3 Play an MD.

③ Press ►•▶▶I (turn the control to ►•▶▶I on the remote control).
The player starts to play the first track.
When using the remote control, a short beep sounds in the headphones. The OPR/CHG lamp on the main unit will light up.

④ Press VOLUME +/– (VOL +/– on the remote control) to adjust the volume.
The volume will be displayed on the remote control.


VOL +/–
■
VOLUME +/–
■STOP/ CHARGE
② Connect the headphones with remote control to ∩ (headphones).
① Connect the headphones to the remote control.
Plug it in firmly all the way.

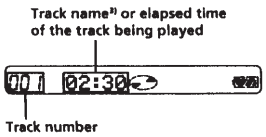
To stop play, press ■.
When using the remote control, a short beep sounds in the headphones.
The OPR/CHG lamp on the main unit will go off. The display on the remote control will disappear after a while.

To	Press (Beeps in the headphones)
Pause	II on the remote control (Continuous short beeps) Press II again to resume play.
Find the beginning of the current track	I◄◄ or turn the control to I◄◄ on the remote control once (Three short beeps)
Find the beginning of the next track	►•▶▶I or turn the control to ►•▶▶I on the remote control once (Two short beeps)
Go backwards while playing[1]	keep pressing I◄◄ or keep the control turned to I◄◄ on the remote control
Go forward while playing[1]	keep pressing ►•▶▶I or keep the control turned to ►•▶▶I on the remote control
Remove the MD	■ and push OPEN to open the lid.[2]

When using the headphones
Wear the "L" marked side to the left ear and the "R" marked side to the right ear.

If playback does not start
Make sure the player is not locked. See "To lock the controls."

Display window while playing back



Tips
- The OPR/CHG lamp will light up on the main unit during playback. It will go off when ■ is pressed.
- The display on the remote control will disappear after a few seconds after you have pressed ■.

Note
Do not push OPEN during playback. If you do, the lid opens and playback will stop.

When using optional headphones
Use the headphones that have stereo-miniplug. You cannot use other types of headphones (microplug).

1) If you press I◄◄ or ►•▶▶I during pause, the player will resume playback. If you keep pressing I◄◄ or ►•▶▶I during pause (keep the control turned to I◄◄ or ►•▶▶I on the remote control), you can fast forward/rewind without listening to the playback sound.
2) Once you open the lid, the point to start play will change to the beginning of the first track.
3) Appears only with MDs that have been electronically labeled.

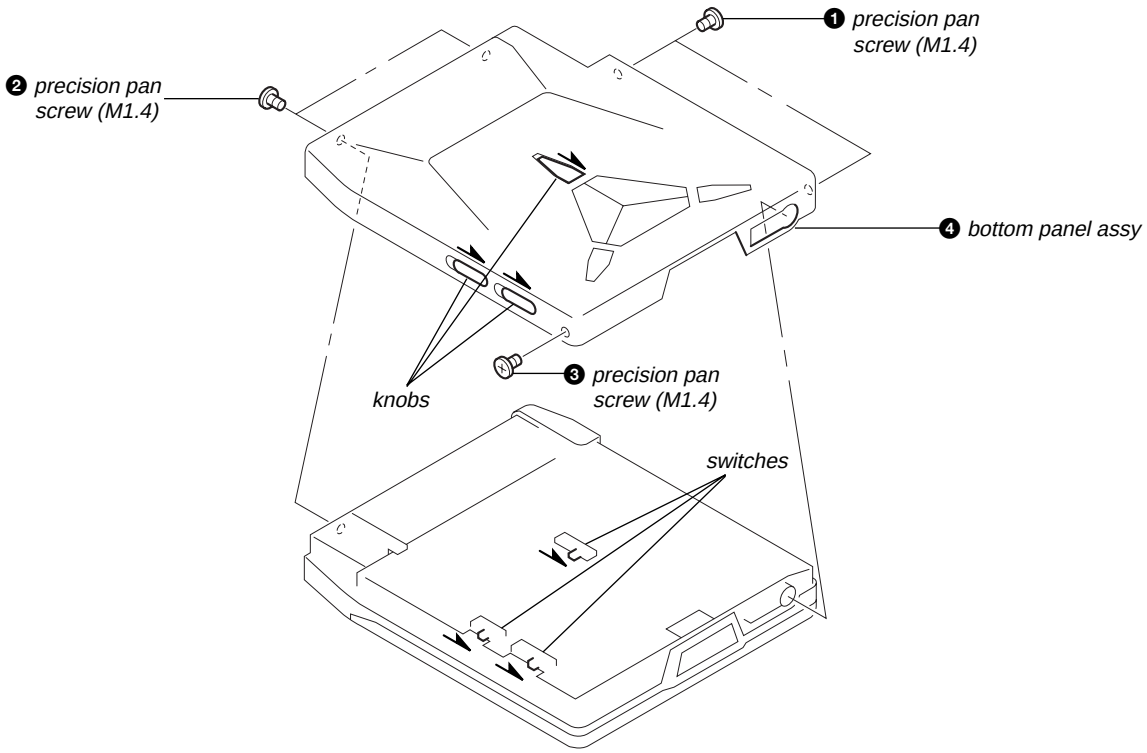
SECTION 3
DISASSEMBLY

• The equipment can be removed using the following procedure.
Bottom panel assy ➡ Main board
Upper panel assy ➡ Main board ➡ MD assy ➡ OP service assy

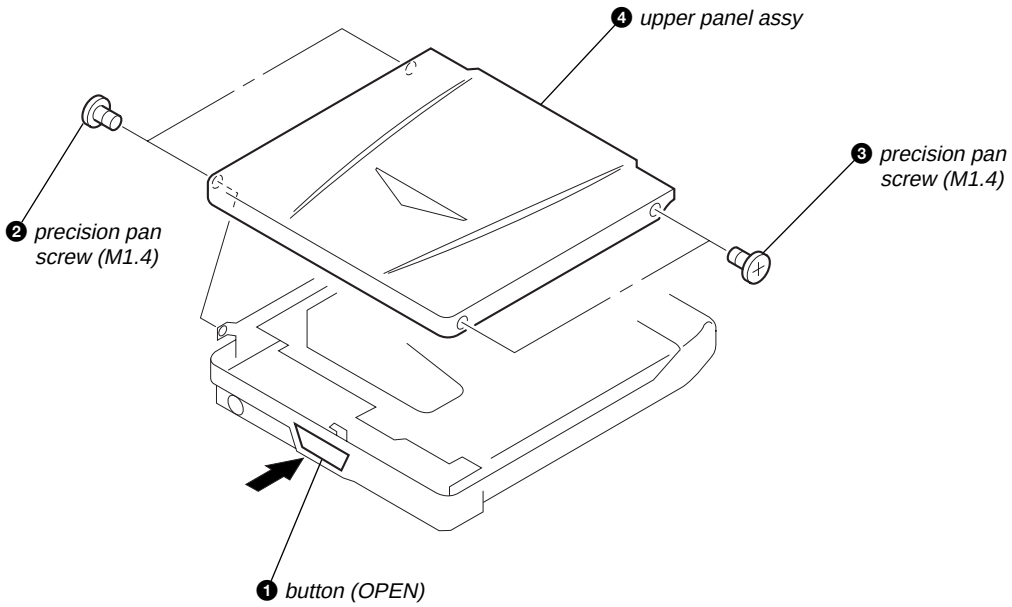
Note : Follow the disassembly procedure in the numerical order given.

3-1. BOTTOM PANEL ASSY

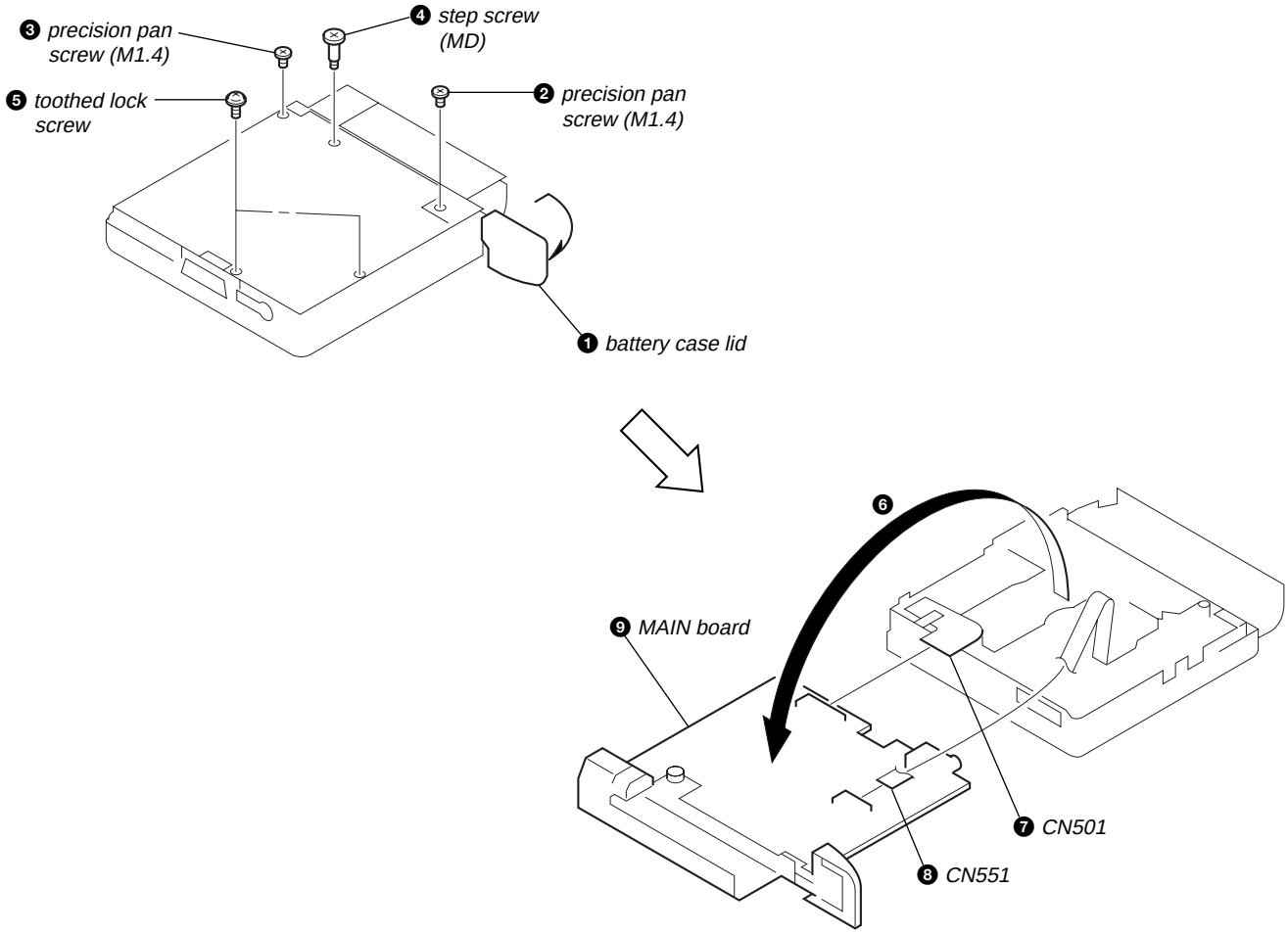
Note : When installing, fit the knobs and switches.



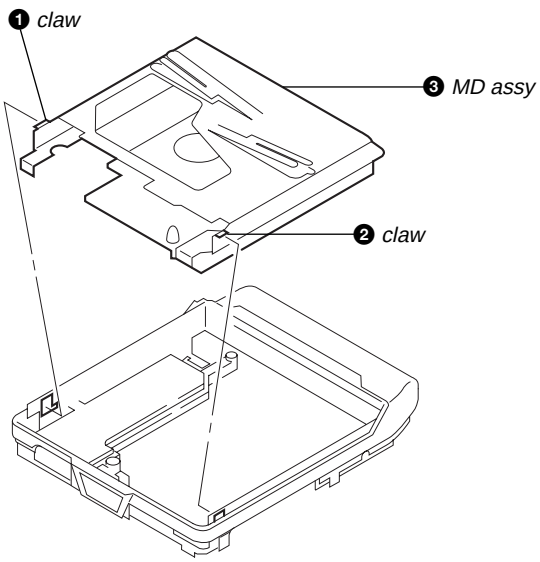
3-2. UPPER PANEL ASSY



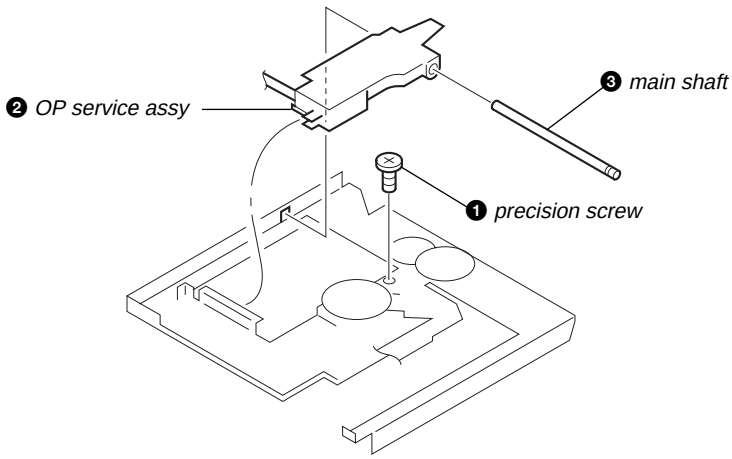
3-3. MAIN BOARD



3-4. MD ASSY



3-5. OP SERVICE ASSY



SECTION 4
TEST MODE

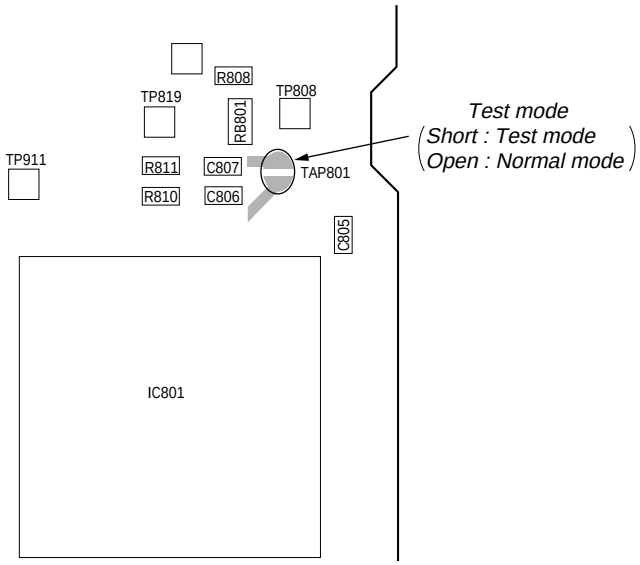
Outline

- In this set, overall adjustment mode is made available by entering test mode to perform automatic adjustment of CD and MO. In the overall adjustment mode, the disc is determined whether it is CD or MO and adjustments are performed in sequence. If a fault is found, the location of the fault is displayed. Also, in service mode, each adjustment can be automatically made.

Setting the Test Mode

To enter the test mode, two methods are available:

1. Entering method with key input.
   Turn off the HOLD switch on the set. While holding down the ■ key on the set, press the following remote commander keys in the following order:
   ▶▶| → ▶▶| → |◀◀ → |◀◀ → ▶▶| → |◀◀ → ▶▶| → |◀◀ → II → II
2. Entering method by shorting the test point
   Solder bridge the test point TAP801 (TEST) on the main board (connect IC801 pin ⑫ to GND), and turn on the POWER.

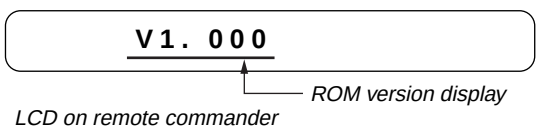


Releasing the Test Mode

1. When test mode was entered with key input, turn off the POWER.
2. When test mode was entered by shorting the test point, turn off the POWER and open the solder bridge of TAP801 (TEST MODE) on the main board.

Operation of Setting on Test Mode

When the test mode is set, the LCD displays the following:

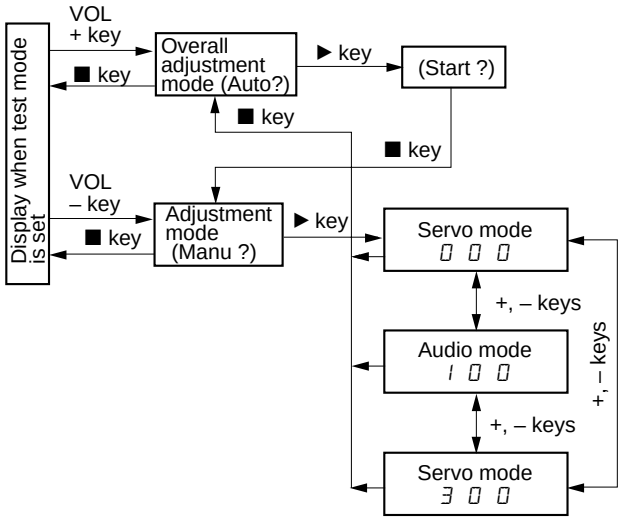


LCD on remote commander

- The cycle - the above ROM version display → All lit → All off - is repeated.
  (The ROM version is constantly displayed.)
- When the PLAY MODE key is pressed and held down, the display at that time is held so that display can be checked.

Configuration of Test Mode

The test mode has the configuration given below.

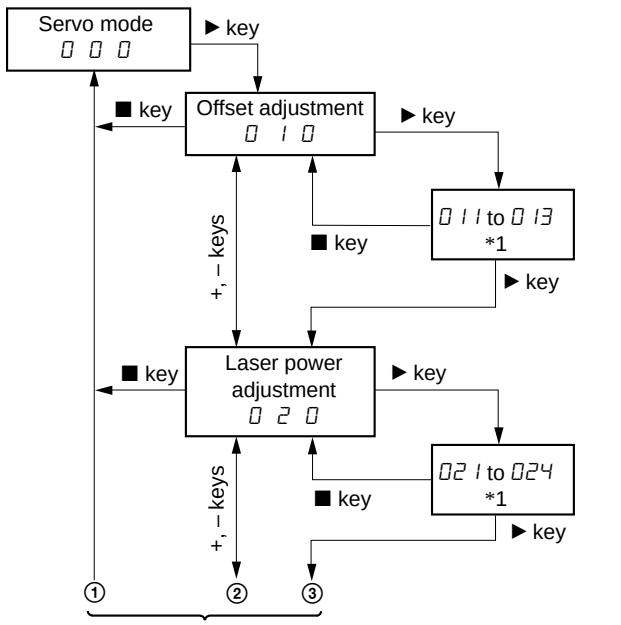


Displays of the LCD on the remote commander are shown in parentheses.

Servo Mode

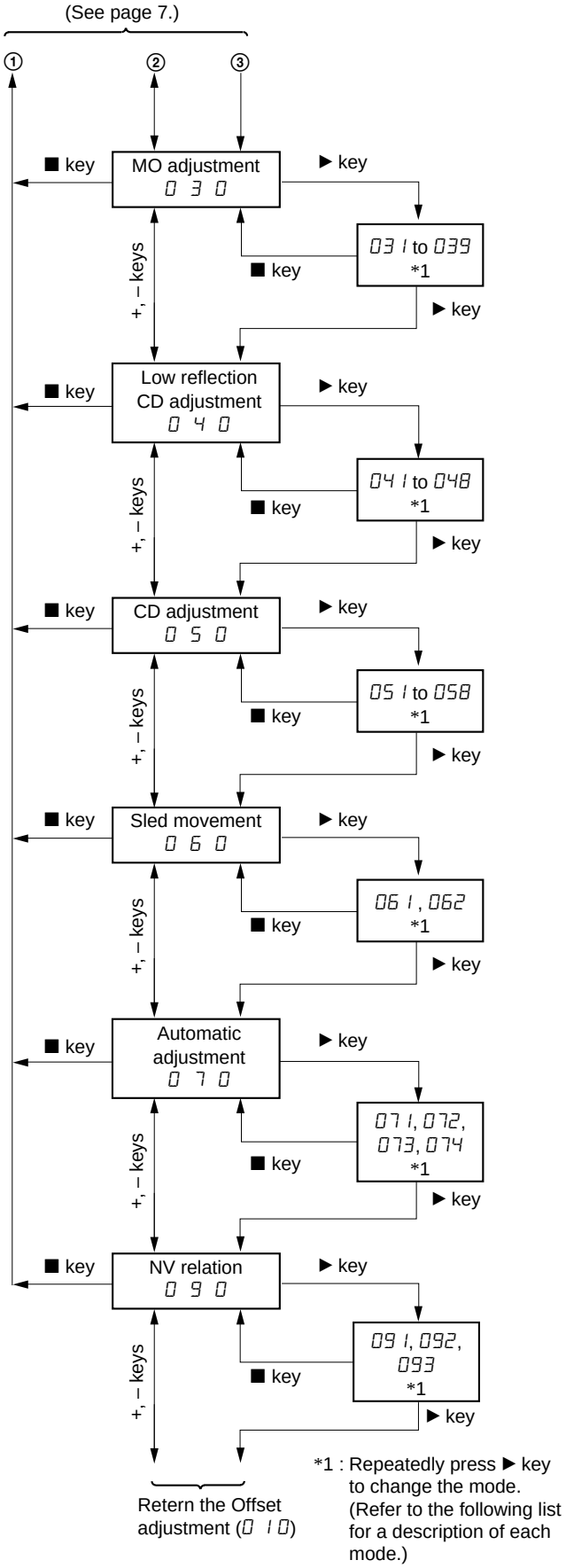
- Set the test mode, press the VOL – key and use the ▶ key to set the servo mode.
- When the servo mode is set, use the ▶▶| key and the |◀◀ key to move the optical pick-up to the outer circumference and to the inner circumference respectively.
- When entering another mode, refer to the configuration of test mode.

1. Structure of Servo Mode



(See page 8)

*1 Repeatedly press ▶ key to change the mode. (Refer to the following list for a description of each mode.)



2. Description of Each Mode

010 Offset adjustment

Mode	Description
011	FE offset
012	TE offset
013	All servo ON

020 Laser power adjustment

Mode	Description
021	MO power A
022	MO power E
023	CDL power
024	CD power

030 MO adjustment

Mode	Description
031	MO FE balance
032	MO FE gain
033	MO ABCD gain
034	MO focus gain
035	MO tracking gain
036	MO RF gain
037	MO ADIP gain
038	MO focus bias E
039	CD focus bias A

040 Lower reflection CD adjustment

Mode	Description
041	Lower reflection CD FE balance
042	Lower reflection CD FE gain
043	Lower reflection CD ABCD gain
044	Lower reflection CD focus gain
045	Lower reflection CD tracking gain
046	Lower reflection CD RF offset
047	Lower reflection CD RF gain
048	Lower reflection CD focus bias

050 CD adjustment

Mode	Description
051	CD FE balance
052	CD FE gain
053	CD ABCD gain
054	CD focus gain
055	CD tracking gain
056	CD RF offset
057	CD RF gain
058	CD focus bias

060 Sled movement

Mode	Description
061	Sled in
062	Sled out 5

070 Automatic adjustment

Mode	Description
071	Focus search
072	Access 32
073	ADER check
074	Tracking sensitivity adjust

090 NV relation

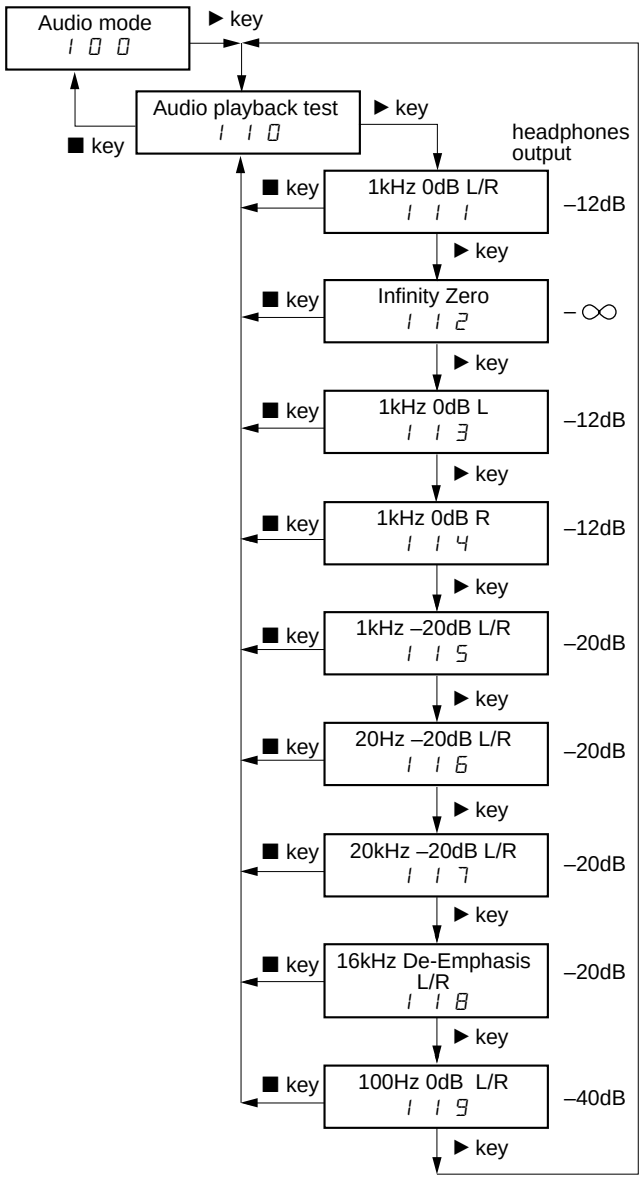
Mode	Description
091	NV clear
092	Power OFF
093	Function code change

Audio Mode

- Enter the test mode and press the VOL – key. Then, press the ▶ key and the VOL + key in this turn to enter audio mode.
- When entering another mode, refer to the configuration of test mode.

1. Structure of Audio Mode

- The mode No. 111 is for S/N and crosstalk. The mode No. 115 is for distortion factor and frequency characteristics.

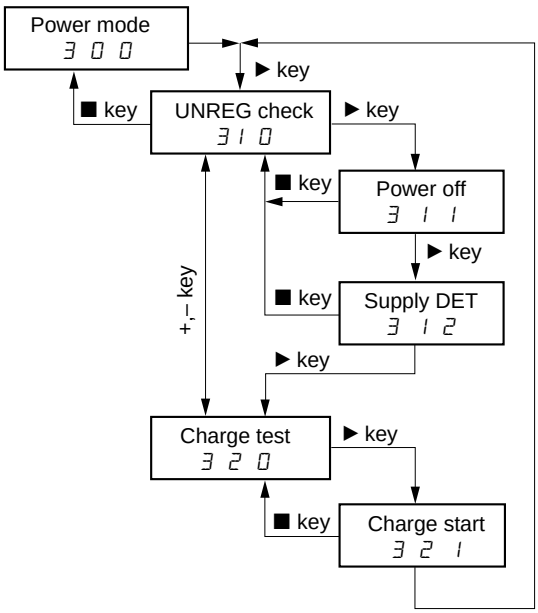


- When the VOL +/– keys is pressed in any mode, the volume of the headphones is changed (increased/decreased) in units of one step. When the ▶▶|/|◀◀ keys is pressed, the volume of the headphones is maximized/minimized.
- For the volume value, any changed value remains as it is basically.
  However, when the volume is switched from 114 to 115 or 118 to 119, it returns the default value.

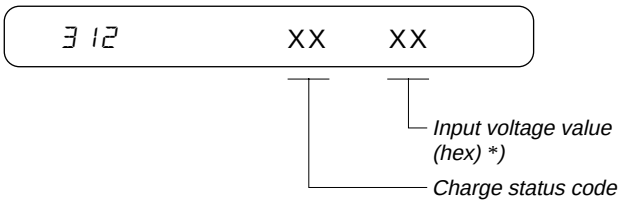
Power Mode

- Enter the test mode and press the VOL – key. Then, press the ▶ key and the VOL – key in this turn to enter power mode.
- When entering another mode, refer to the configuration of test mode.

1. Power Mode Structure



- Press the ■ key to disconnect the power in mode No. 311.
- To display power information in mode No. 312.



*) Input voltage value = Display voltage value (hex) divided by 256 and multiplied by 9.016
Example:
With display of 50 (hex), 50 (hex) = 80 (dec)
Input voltage = 80 divided by 256 and multiplied by 9.016
= 2.8175 V

Charge status code (second digit)

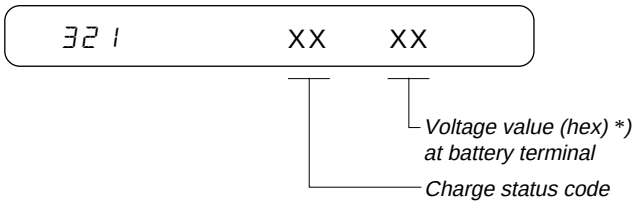
Code	Description
0	Unable to charge (No adaptor attached, or no power if present)
8	Chargeable *1)
A	Servo system stopped/chargeable *1)

*1) Chargeable: AC adaptor attached and AA battery available, or AC adaptor attached and gum type battery available.

Charge status code (first digit)

Code	Description
1	Gum type battery not detected (AA battery available or no battery)
2	Description Gum type battery detected
4	AC adaptor detected
5	Gum type battery not detected/AC adaptor detected
6	Gum type battery detected/AC adaptor detected

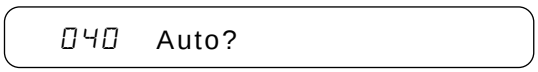
- When in mode No. 321, the system automatically tries to detect the AC adaptor and the battery. If chargeable, it starts charging. (No charge display and no LED flashing during this mode.)



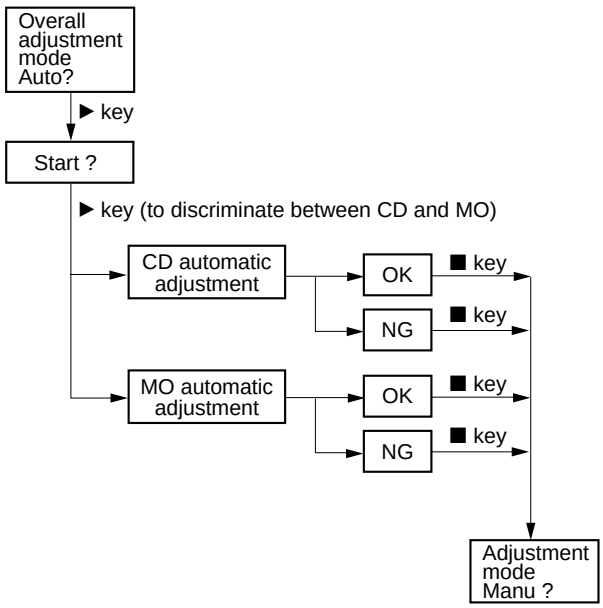
*) Battery terminal voltage = Display voltage value (hex) divided by 256 and multiplied by 2.8
Example:
With display of A0 (hex), A0 (hex) = 160 (dec)
Terminal voltage = 160 divided by 256 and multiplied by 2.8
= 1.75 V

Overall Adjustment Mode

- Enter the test mode and press the VOL + key to enter overall adjustment mode.
- When entering another mode, refer to the configuration of test mode.
- When the overall adjustment mode is entered, the LCD on the remote commander display the following:



1. Structure of Overall Adjustment Mode



SECTION 5
ELECTRICAL ADJUSTMENTS

Notes for Adjustment

- In this set, automatic adjustment of CD and MO can be performed by entering the test mode.
- Adjustments are performed in the overall adjustment mode. If an item is determined as NG, the item is readjusted in servo mode.

Adjustment Method in Overall Adjustment Mode

1. Enter the test mode and press the VOL + key to enter overall adjustment mode.
2. Insert the test CD (TGYS-1) or SONY MO disk (recorded) commercially available.
3. Press the ▶ key twice. The disc is determined whether it is CD or MO and each adjustment mode is set. Automatic adjustments are performed in the order of the items listed below.

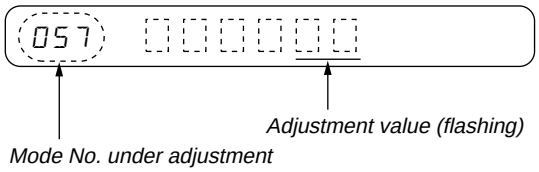
- In CD Automatic Adjustment Mode

No.	Mode	Description
1	061	Sled in
2	071	Focus search
3	062	Sled out 5
4	051	CD FE balance
5	052	CD FE gain
6	051	CD FE balance
7	053	CD ABCD gain
8	054	CD focus gain
9	055	CD tracking gain
10	056	CD RF offset
11	057	CD RF gain
12	056	CD RF offset
13	058	CD Focus bias

- In MO Automatic Adjustment Mode

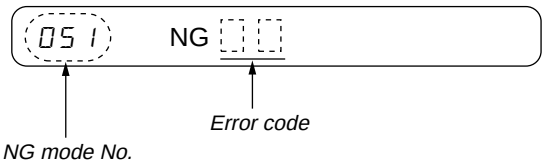
No.	Mode	Description
1	061	Sled in
2	071	Focus search
3	062	Sled out
4	031	MO FE balance
5	032	MO FE gain
6	031	MO FE balance
7	033	MO ABCD gain
8	034	MO focus gain
9	035	MO tracking gain
10	036	MO RF gain
11	037	MO ADIP gain
12	039	MO focus bias A
13	073	ADER check
14	071	Focus search
15	031	MO FE balance
16	032	MO FE gain
17	031	MO FE balance
18	033	MO ABCD gain
19	034	MO focus gain
20	035	MO tracking gain
21	036	MO RF gain
22	037	MO ADIP gain
23	039	MO focus bias A
24	073	ADER check
25	061	Sled in
26	071	Focus search
27	041	Low reflection CD FE balance
28	042	Low reflection CD FE gain
29	041	Low reflection CD FE balance
30	043	Low reflection CD ABCD gain
31	044	Low reflection CD focus gain
32	045	Low reflection CD tracking gain
33	046	Low reflection CD RF offset
34	047	Low reflection CD RF gain
35	061	Sled in
36	071	Focus search
37	041	Low reflection CD FE balance
38	042	Low reflection CD FE gain
39	041	Low reflection CD FE balance
40	043	Low reflection CD ABCD gain
41	044	Low reflection CD focus gain
42	045	Low reflection CD tracking gain
43	046	Low reflection CD RF offset
44	047	Low reflection CD RF gain

* Remote commander display during automatic adjustment



4. If result of automatic adjustment is OK, the following display appears.

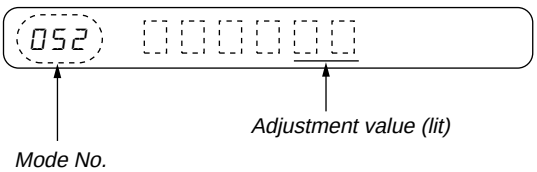
5. If result of automatic adjustment is NG, the following display appears.



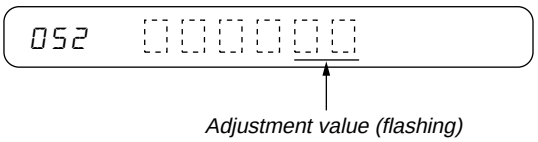
* If NG, enter servo mode to perform automatic adjustment of the item determined as NG.

Adjustment in Servo Mode Method

1. When each adjustment mode is set according to the structure of servo mode, the lower two digits of the mode No. and the adjustment value written in EEPROM are displayed and lit on the LCD on the remote commander .

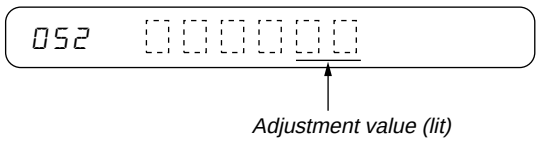


2. When the ▮▮ key is pressed, the following display appears and the automatic adjustment is performed.



Note) Although the VOL +/– keys can be used to change the adjustment value to any value, they should not be used whenever possible.

3. When the automatic adjustment is completed, the flashing adjustment value is lit.



SECTION 6
DIAGRAMS

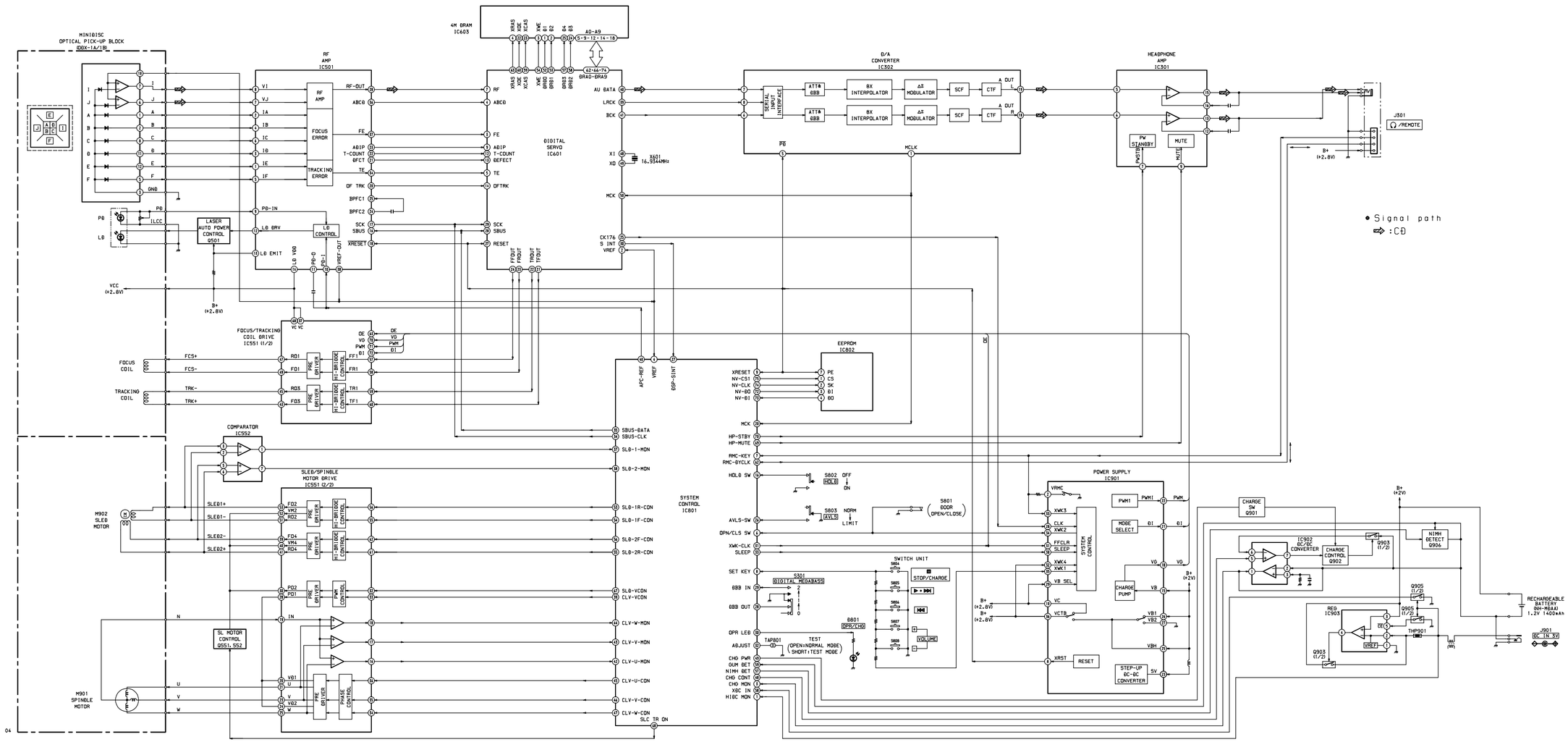
6-1. IC PIN DESCRIPTION

• IC801 RU6815MF-0004 (SYSTEM CONTROL)

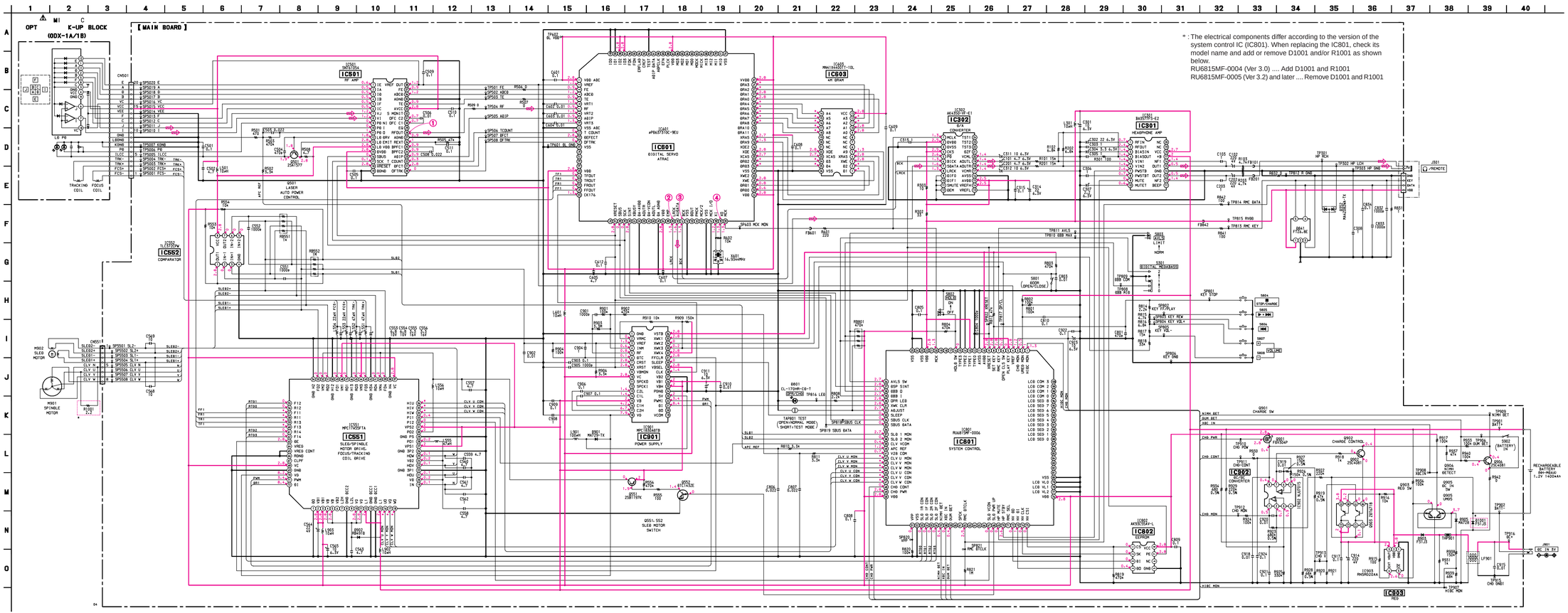
Pin No.	Pin Name	I/O	Pin Description
1	HIDC MON	I	HIDC voltage monitor input.
2	UREG MON	I	Unreg voltage monitor input.
3	CHG MON	I	CHG voltage monitor input.
4	VREF	I	Reference voltage for power supply voltage adjustlment.
5	PLAY KEY	I	Set PLAY key input.
6	OPEN CLS SW	I	DOOR OPEN/CLOSE switch input. L : Close
7	RMC KEY	I	Remote commander key input.
8	SET KEY	I	Set key input.
9	XRESET	I	Systen reset input (At reset : “L”).
10	AVDD	—	A/D converter power supply (+2.8V).
11	AVSS	—	A/D converter Ground.
12	TYPE 0	I	Model discrimination terminal (Fixed at “L”).
13	TYPE 1	I	Model discrimination terminal (Fixed at “H”).
14	TYPE 2	I	Model discrimination terminal (Fixed at “L”).
15	TYPE 3	I	Model discrimination terminal (Fixed at “L”).
16	HOLD SW	I	Set HOLD switch input.
17	VREG CON	O	2.5V voltage on/off switch (Sub terminal) (not used).
18		—	Not used (Open).
19		—	Not used (Open).
20	MCK	I	Master clock input.
21		—	Not used (Open).
22	VDD	—	Digital power supply (+2.8V).
23	VSS	—	Digital Ground.
24		—	Not used (Open).
25	VSS	—	Digital Ground.
26	AVLS SW	I	Set AVLS switch input.
27	DSP SINT	I	Interrupt input from DSP.
28	DBB 0	I	DIGITAL MEGABASS switch input (MID).
29	DBB 1	I	DIGITAL MEGABASS switch input (MAX).
30	OPR LED	O	LED drive output.
31	XWK CLR	O	Power IC wakeup factor latch clear output and motor driver IC control signal outpt.
32	ADJUST	I	“Normally” Test mode select input (“L” : Test mode)
33	SLEEP	O	Power supply circuit OFF signal output.
34	SBUS CLK	O	SBB serial clock output.
35	SBUS DATA	O	SBB serial data output.
36		—	Not used (Open).
37	SLD 1 MON	I	Sled servo timing signal input.
38	SLD 2 MON	I	Sled servo timing signal input.
39	CLV VCON	O	Spindle servo drive voltage control output.
40	APC REF	O	Laser power control output.
41	V28-CON	O	Power voltage (+2.8V) correction control output.
42	CLV U MON	I	Spindle servo timing signal input.
43	CLV V MON	I	Spindle servo timing signal input.
44	CLV W MON	I	Spindle servo timing signal input.
45	CLV U CON	O	Spindle servo drive signal output.
46	CLV V CON	O	Spindle servo drive signal output.
47	CLV W CON	O	Spindle servo drive signal output.

Pin No.	Pin Name	I/O	Pin Description
48	CHG CONT	O	CHG control signal output.
49	CHG PWR	O	CHG power supply voltage control signal output.
50	VDD	—	Digital power supply (+2.8V).
51	VPP	—	Power for on board light.
52	VSS	—	Digital ground.
53	SLD 1R CON	O	Sled motor control signal output.
54	SLD 1F CON	O	Sled motor control signal output.
55	SLD 2R CON	O	Sled motor control signal output.
56	SLD 2F CON	O	Sled motor control signal output.
57	NIMH DET	I	NIMH detect signal input.
58	XDC IN	I	Power supply voltage input sense signal input.
59	GUM DET	I	Battery detect signal input.
60		—	Not used (Open).
61	SPCK	O	Serial clock output for Remote control communication. Not used (Open).
62	RMC DTCLK	I/O	Serial data input/output for Remote control communication.
63 – 66		—	Not used (Open).
67	SLD VCON	O	Sled servo outer voltage control output.
68	SLD PWR-UP	O	Baypass transistor control output for sled drive power supply.
69	HP MUTE	O	Headphone amplifier mute output.
70	HP STBY	O	Headphone amplifier standby output.
71	RMC SEL	O	TSB/SSB selection signal output to remote commander terminal. Not used (Open).
72	NV D0	O	Serial data signal output for NVRAM.
73	NV D1	I	Serial data signal input from NVRAM.
74	NV CLK	O	Serial clock signal output for NVRAM.
75	NV CS1	O	Chip select signal output for NVRAM.
76	VDD	—	Digital power supply (+2.8V).
77 – 79	LCD VL2 – 0	I	LCD drive level power supply (Connected ground).
80	VSS	—	Digital ground.
81 – 87		—	Not used (Open).
88 – 96	LCD SEG0 – 8	—	LCD Segment terminal. Not used (Open).
97 – 100	LCD COM0 – 3	—	LCD common terminal. Not used (Open).

6-2. BLOCK DIAGRAM



6-4. SCHEMATIC DIAGRAM • Refer to page 25 for IC Block Diagrams.



• Waveforms (MODE:PLAY)

① 800mVp-p
IC501 (28) VOLT/DIV : 200mV AC
TIME/DIV : 5 µsec

② 2.7Vp-p, 23 µsec
IC601 (39) VOLT/DIV : 1V AC
TIME/DIV : 10 µsec

③ 2.6Vp-p, 482nsec
IC601 (41) VOLT/DIV : 500mV AC
TIME/DIV : 200nsec

④ 2.0 Vp-p, 16.9344 MHz
IC601 (48) VOLT/DIV : 500mV AC
TIME/DIV : 20nsec

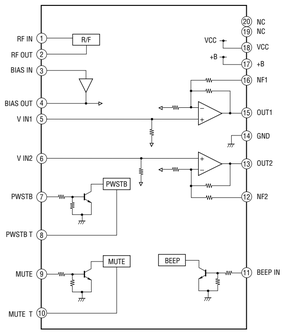
Note:
- All capacitors are in µF unless otherwise noted. pF: µµF
  50 WV or less are not indicated except for electrolytics and tantaliums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

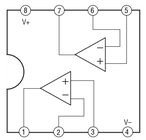
- ▬▬ : B+ Line.
- Power voltage is dc 3 V and fed with regulated dc power supply from battery terminal.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark : MD PLAY
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : MD

• IC Block Diagrams

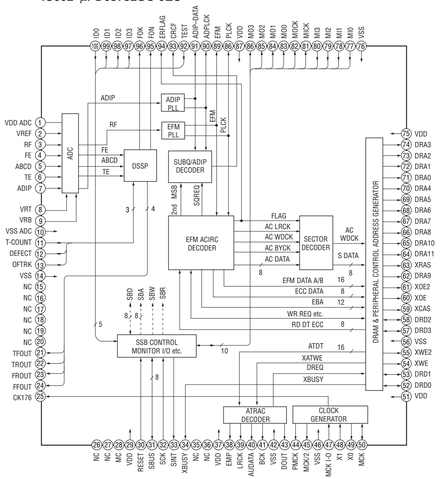
IC301 BA3577FS-E2



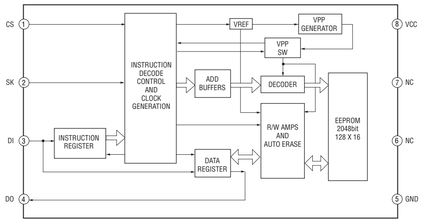
IC552 TLC372CPWR



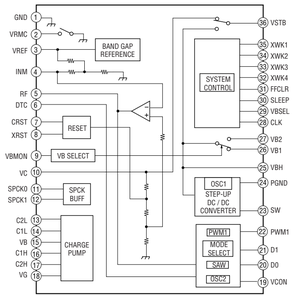
IC601 μPD63731GC-9EU



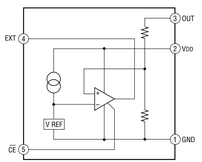
IC802 AK93C55AV-L



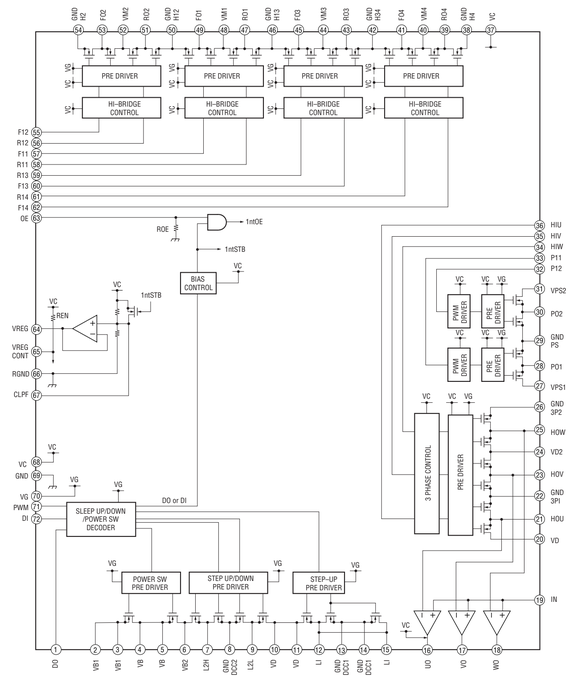
IC901 MPC1830ADTBEL



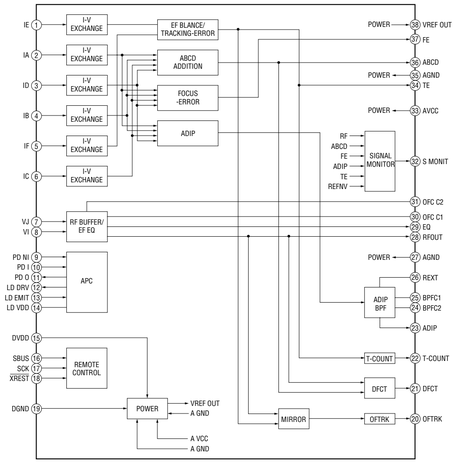
IC903 RN5RG20AA-TL



IC551 MPC17A55FTA



IC501 SN761054



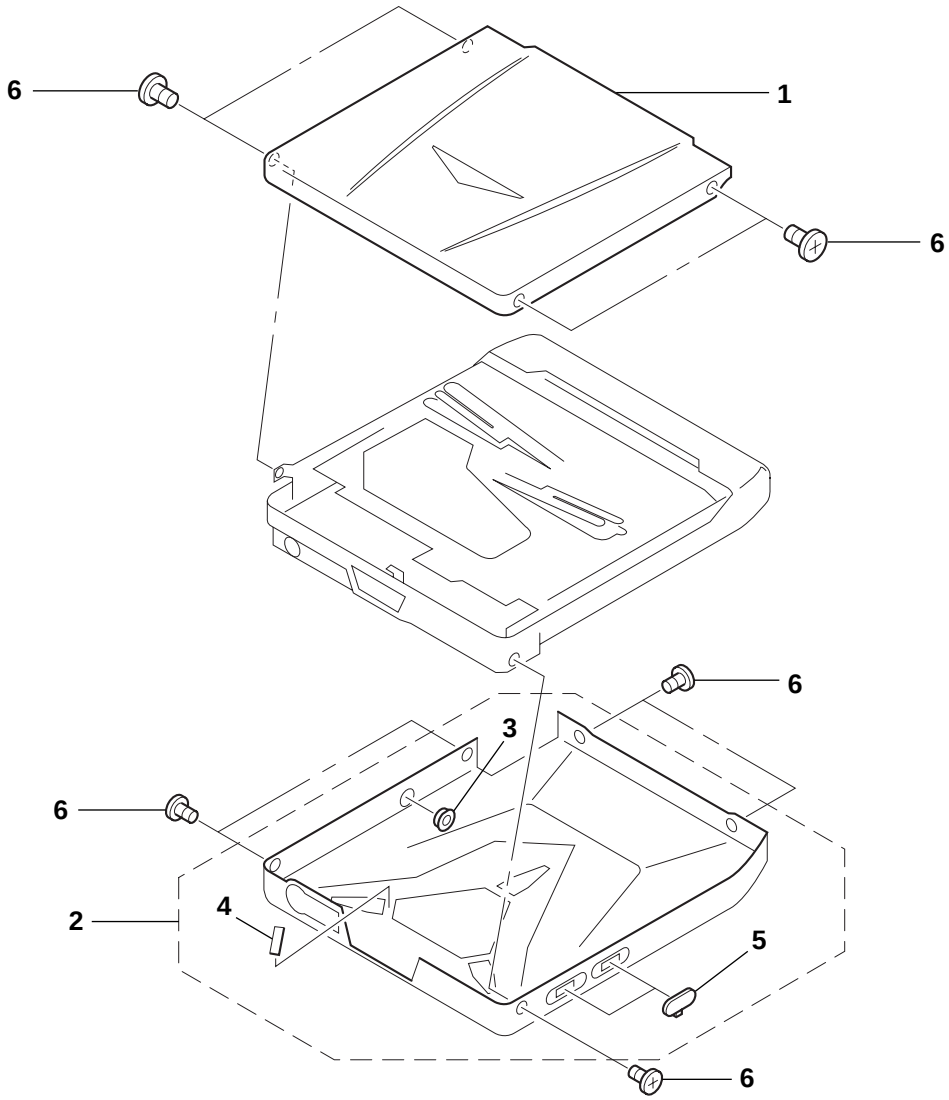
SECTION 7
EXPLODED VIEWS

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Abbreviation
  CND : Canadian model
  HK : Hong Kong model
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE) ... (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Accessories and packing materials are given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

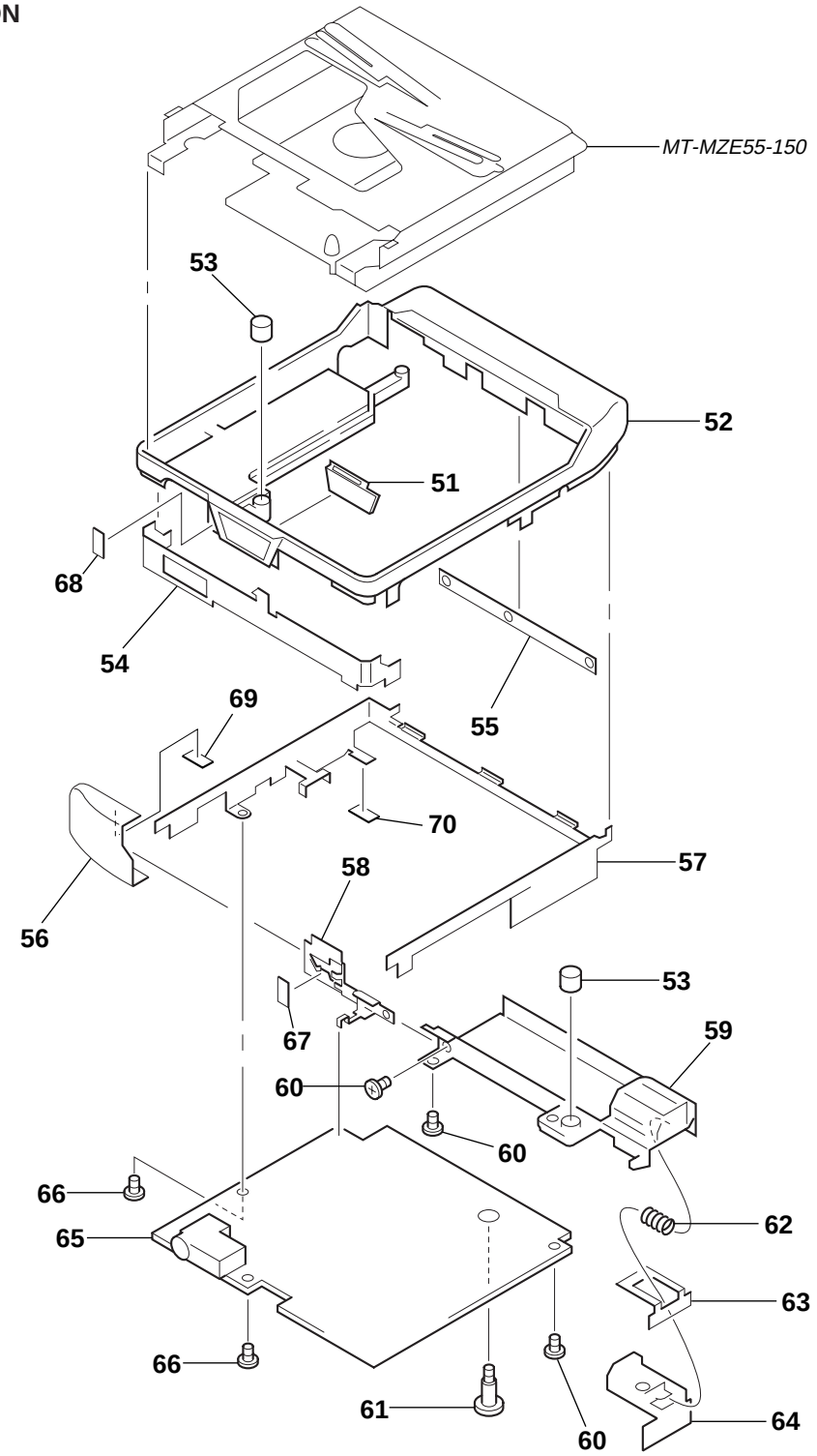
7-1. PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	X-4950-595-1	PANEL SUB ASSY	, UPPER (B) (BLA CK) (US)
1	X-4950-596-1	PANEL SUB ASSY	, UPPER (N) (GOLD)
1	X-4950-597-1	PANEL SUB ASSY	, UPPER (L) (BLUE) (AEP , E, HK)
1	X-4951-429-1	PANEL SUB ASSY	, UPPER (Y) (YELLO W) (AEP)
2	X-4950-598-1	PANEL SUB ASSY	, LO WER (B) (BLA CK) (US)
2	X-4950-599-1	PANEL SUB ASSY	, LO WER (N) (GOLD)
2	X-4950-600-1	PANEL SUB ASSY	, LO WER (L) (BLUE) (AEP , E, HK)
2	X-4951-430-1	PANEL SUB ASSY	, LO WER (Y) (YELLO W) (AEP)
3	3-010-287-01	COLLAR (DC IN 3V)	
4	4-986-349-01	SPACER	

Ref. No.	Part No.	Description	Remark
5	3-939-835-01	KNOB (DIGIT AL MEGAB ASS, A VLS) (BLA CK)	(US)
5	3-939-835-21	KNOB (DIGIT AL MEGAB ASS, A VLS) (GOLD)	
5	3-939-835-31	KNOB (DIGIT AL MEGAB ASS, A VLS) (BLUE)	(AEP , E, HK)
5	3-939-835-41	KNOB (DIGIT AL MEGAB ASS, A VLS) (YELLO W)	(AEP)
6	4-963-883-21	SCREW (M1.4), PRECISION P AN (f or GOLD , BLUE, YELLOW)	
6	4-963-883-32	SCREW (M1.4), PRECISION P AN (f or BLA CK)	(US)

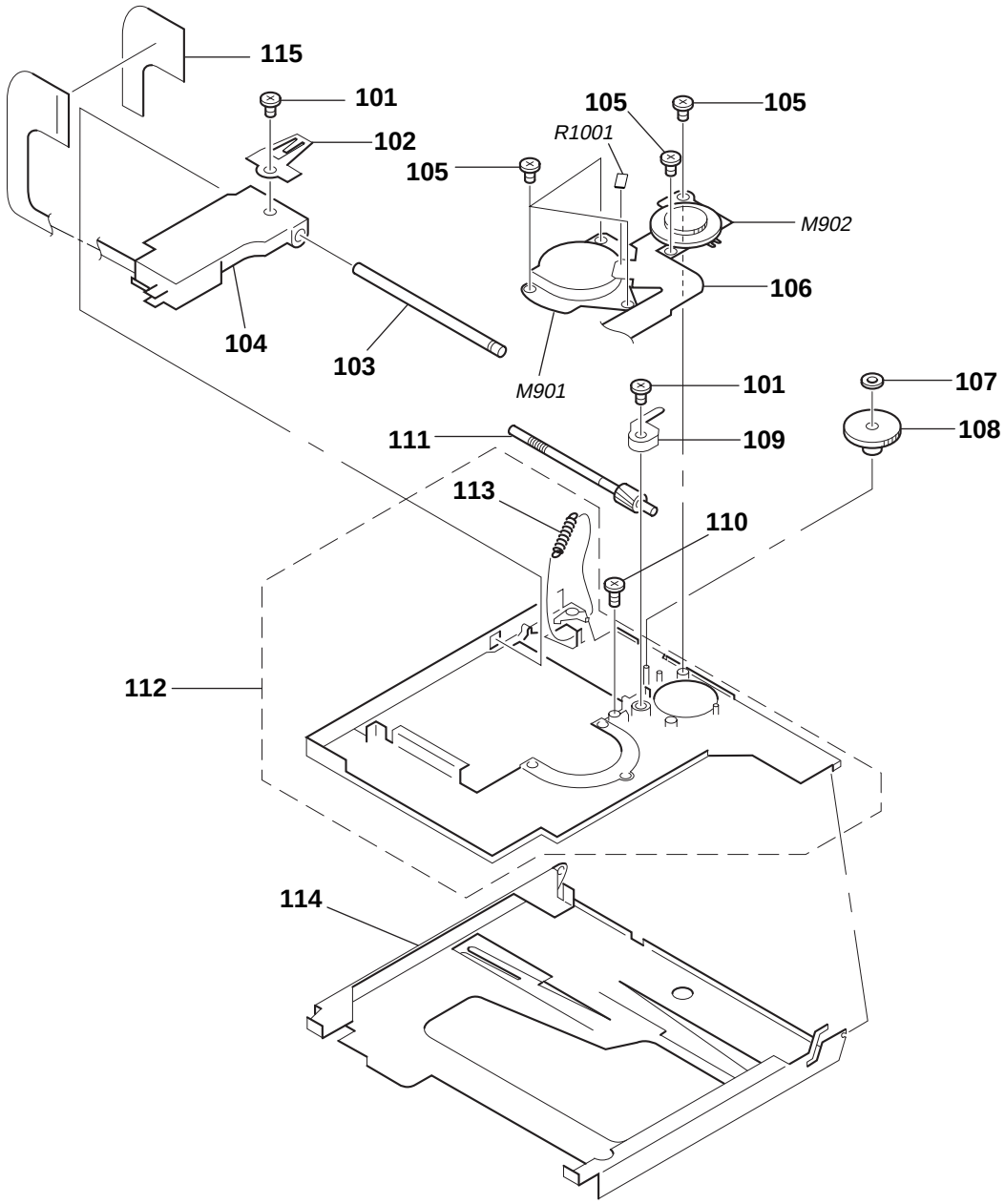
7-2. MAIN BOARD SECTION



Ref. No.	Part No.	Description	Remark
51	4-212-361-02	BUTTON(OPEN)	
52	X-4950-429-1	STRIP ASSY(B), ORNAMENT AL(BLA CK)(US)	
52	X-4950-503-1	STRIP ASSY(N), ORNAMENT AL(GOLD)	
52	X-4950-504-1	STRIP ASSY(L), ORNAMENT AL(BLUE) (AEP ,E,HK)	
52	X-4951-428-1	STRIP ASSY(Y), ORNAMENT AL(YELLO W) (AEP)	
53	4-982-418-01	DAMPER	
54	X-4950-350-1	BRACKET(A)ASSY	
* 55	4-212-363-01	BRACKET(C)	
56	4-212-364-02	LID ,BATTER YCASE(BLA CK)(US)	
56	4-212-364-12	LID ,BATTER YCASE(GOLD)	
56	4-212-364-22	LID ,BATTER YCASE(BLUE)(AEP ,E,HK)	
56	4-212-364-31	LID ,BATTER YCASE(YELLO W)(AEP)	

Ref. No.	Part No.	Description	Remark
57	X-4950-351-1	BRACKET(B)ASSY	
58	X-4950-354-1	TERMINAL ASSY ,BATTER Y	
59	4-212-366-01	CASE, BATTER Y	
60	4-963-883-21	SCREW(M1.4), PRECISION P AN	
61	4-994-886-01	SCREW(MD),STEP	
62	4-214-232-01	SPRING(B ATTER Y),COMPRESSION	
63	4-212-369-01	TERMINAL PLA TE(PLUS)	
64	4-212-367-01	HOLDER(TERMINAL PLA TE)	
65	A-3323-069-A	MAIN BOARD,COMPLETE	
66	3-335-797-01	SCREW(M1.4X2),TOOTHED LOCK	
67	3-315-454-01	SPACER(E)	
68	4-217-658-01	SPACER(K)	
69	4-216-847-01	SPACER(B ATT)	
70	4-218-050-01	SPACER(B)	

7-3. MECHANISM DECK SECTION (MT-MZE55-150)



The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
101	4-963-883-61	SCREW (M1.4), PRECISION P AN	
102	4-982-561-11	SPRING, RACK	
103	4-214-478-01	SHAFT , MAIN	
⚠ 104	X-4949-164-1	SER VICE ASSY , OP	
105	4-963-883-21	SCREW (M1.4), PRECISION P AN	
106	1-670-707-11	CL VR FLEXIBLE BO ARD	
107	4-965-893-01	WASHER, GEAR (A) ST OPPER	
108	4-982-555-01	GEAR (A)	
109	4-212-899-01	SPRING, THRUST	
110	3-349-825-82	SCREW , PRECISION	
111	X-4948-793-1	REED ASSY	
112	X-4950-414-3	CHASSIS ASSY	
113	4-986-811-01	SPRING (EJECT), TENSION	
114	4-212-896-04	HOLDER	
115	4-214-207-01	SHEET (OP)	
M901	8-835-594-01	MOTOR, DC SSM-01C03A/J-S (SPINDLE)	
M902	1-698-764-21	MOTOR, SLED (INCLUDING GEAR)	
R1001	1-216-789-11	MET AL CHIP 2.2 5% 1/16W	

MAIN

SECTION 8
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Abbreviation
  CND : Canadian model
  HK : Hong Kong model
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ, for example:
  uA.. : μA.. uPA.. : μPA..
  uPB.. : μPB.. uPC.. : μPC.. uPD.. : μPD..
- CAPACITORS
  uF : μF
- COILS
  uH : μH

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
	A-3323-069-A	MAINBOARD,COMPLETE			
		**********			
		<CAP ACITOR>			
C101	1-135-181-21	TANT ALUM CHIP	4.7uF	20%	6.3V
C102	1-125-899-11	TANT AL. CHIP	220uF	20%	4V
C103	1-115-156-11	CERAMIC CHIP	1uF		10V
C201	1-135-181-21	TANT ALUM CHIP	4.7uF	20%	6.3V
C202	1-125-899-11	TANT AL. CHIP	220uF	20%	4V
C203	1-115-156-11	CERAMIC CHIP	1uF		10V
C301	1-117-919-11	TANT AL. CHIP	10uF	20%	6.3V
C302	1-119-750-11	TANT AL. CHIP	22uF	20%	6.3V
C303	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C304	1-127-690-21	TANT AL. CHIP	3.3uF	20%	6.3V
C305	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C306	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C307	1-135-149-21	TANT ALUM CHIP	2.2uF	20%	10V
C308	1-115-156-11	CERAMIC CHIP	1uF		10V
C311	1-127-688-21	TANT AL. CHIP	10uF	20%	6.3V
C312	1-127-688-21	TANT AL. CHIP	10uF	20%	6.3V
C313	1-115-156-11	CERAMIC CHIP	1uF		10V
C314	1-119-750-11	TANT AL. CHIP	22uF	20%	6.3V
C315	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C501	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C502	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C503	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C504	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C505	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C506	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C508	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C509	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C510	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C511	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C551	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C552	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C553	1-127-689-21	TANT AL. CHIP	6.8uF	20%	10V
C554	1-127-689-21	TANT AL. CHIP	6.8uF	20%	10V
C555	1-127-691-21	TANT AL. CHIP	3.3uF	20%	16V
C556	1-127-691-21	TANT AL. CHIP	3.3uF	20%	16V
C557	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C558	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C559	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C560	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C561	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C562	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C563	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C564	1-117-232-11	TANT ALUM	22uF	20%	4V
C565	1-117-919-11	TANT AL. CHIP	10uF	20%	6.3V
C568	1-117-370-11	CERAMIC CHIP	10uF		10V
C569	1-117-370-11	CERAMIC CHIP	10uF		10V
C601	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C602	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C603	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C604	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C605	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C607	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C608	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C609	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C612	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C801	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C803	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C804	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C805	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C806	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C807	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C808	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C809	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C810	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C832	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C833	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C834	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C901	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C902	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C903	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C904	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C905	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C906	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C907	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C908	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C909	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C910	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C911	1-127-688-21	TANT AL. CHIP	10uF	20%	6.3V
C914	1-125-899-11	TANT AL. CHIP	220uF	20%	4V
C915	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C917	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C918	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C919	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C920	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C921	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V

Ref. No.	Part No.	Description			Remark
C922	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C923	1-127-688-21	TANT AL. CHIP	10uF	20%	6.3V
C924	1-164-156-11	CERAMIC CHIP	0.1uF		25V
		<CONNECTOR>			
CN501	1-573-360-21	CONNECTOR, FFC/FPC 20P			
* CN551	1-785-218-21	CONNECTOR, FPC (ZIF) 8P			
		<DIODE>			
D352	8-719-045-87	DIODE MA4Z082W A-TX			
D801	8-719-051-01	LED CL-170HR-CD-T (OPR/CHG)			
D841	8-719-066-17	DIODE FTZ6.8E-T148			
D901	8-719-420-51	DIODE MA729			
D902	8-719-066-16	DIODE RB491D-T146			
D903	8-719-072-26	DIODE FS1J3-TP			
D905	8-719-421-27	DIODE MA728			
D1001	8-719-072-26	DIODE FS1J3-TP			
		<FERRITE BEAD>			
FB101	1-414-760-21	FERRITE (SMD), EMI			
FB201	1-414-760-21	FERRITE (SMD), EMI			
FB601	1-414-760-21	FERRITE (SMD), EMI			
FB842	1-414-228-11	FERRITE BEAD INDUCTOR			
		< IC >			
IC301	8-759-431-56	IC BA3577FS-E2			
IC302	8-759-541-32	IC AK4350-VF-E1			
IC501	8-759-538-56	IC SN761054			
IC551	8-759-390-25	IC MPC17A55FT A			
IC552	8-759-358-40	IC TLC372CPWR			
IC601	8-759-538-55	IC uPD63731GC-9EU			
IC603	8-759-565-50	IC MN41X4400TT -10TIL			
IC801	8-759-580-35	IC RU6815MF-0006			
IC802	8-759-449-23	IC AK93C55A V-L			
IC901	8-759-538-57	IC MPC1830ADTBEL			
IC902	8-759-559-89	IC NJU7015R-TE2			
IC903	8-759-460-35	IC RN5RG20AA-TL			
		<JACK>			
J301	1-778-368-11	JACK, HEADPHONE ( ) /REMOTE)			
J901	1-779-080-11	JACK, DC (POLARITY UNIFIED TYPE)			
					(DC IN 3V)
		<COIL>			
L301	1-414-754-11	INDUCTOR	10uH		
L501	1-414-754-11	INDUCTOR	10uH		
L551	1-412-031-11	INDUCTOR CHIP	47uH		
L552	1-412-031-11	INDUCTOR CHIP	47uH		
L553	1-414-400-11	INDUCTOR	22uH		
L554	1-414-400-11	INDUCTOR	22uH		
L555	1-412-031-11	INDUCTOR CHIP	47uH		
L556	1-414-410-21	INDUCTOR	10uH		
L601	1-414-754-11	INDUCTOR	10uH		
L901	1-412-032-11	INDUCTOR CHIP	100uH		

Ref. No.	Part No.	Description			Remark
L902	1-416-668-11	CHOKE COIL	10uH		
L903	1-414-410-21	INDUCTOR	10uH		
		<FIL TER>			
LF901	1-416-405-21	FIL TER, CHIP EMI (COMMON MODE)			
		<TRANSISTOR>			
Q501	8-729-922-10	TRANSISTOR 2SA1577-QR			
Q551	8-729-904-87	TRANSISTOR 2SB1197K-R			
Q552	8-729-929-11	TRANSISTOR DTC143ZE-TL			
Q901	8-729-046-49	FET FDV304P			
Q902	8-729-905-35	TRANSISTOR 2SC4081-R			
Q903	8-729-046-44	TRANSIST OR ZDT6718T A			
Q905	8-729-929-67	TRANSISTOR UMG5-TL			
Q906	8-729-905-35	TRANSISTOR 2SC4081-R			
		<RESISTOR>			
R101	1-216-835-11	MET AL CHIP	15K	5%	1/16W
R102	1-216-831-11	MET AL CHIP	6.8K	5%	1/16W
R103	1-216-829-11	MET AL CHIP	4.7K	5%	1/16W
R201	1-216-835-11	MET AL CHIP	15K	5%	1/16W
R202	1-216-831-11	MET AL CHIP	6.8K	5%	1/16W
R203	1-216-829-11	MET AL CHIP	4.7K	5%	1/16W
R301	1-216-809-11	MET AL CHIP	100	5%	1/16W
R302	1-216-803-11	MET AL CHIP	33	5%	1/16W
R303	1-216-797-11	MET AL CHIP	10	5%	1/16W
R501	1-216-817-11	MET AL CHIP	470	5%	1/16W
R502	1-216-827-11	MET AL CHIP	3.3K	5%	1/16W
R503	1-216-853-11	MET AL CHIP	470K	5%	1/16W
R505	1-216-841-11	MET AL CHIP	47K	5%	1/16W
R506	1-216-864-11	MET AL CHIP	0	5%	1/16W
R507	1-216-864-11	MET AL CHIP	0	5%	1/16W
R508	1-216-793-11	RES, CHIP	4.7	5%	1/16W
R509	1-216-864-11	MET AL CHIP	0	5%	1/16W
R553	1-216-833-11	MET AL CHIP	10K	5%	1/16W
R554	1-216-833-11	MET AL CHIP	10K	5%	1/16W
R555	1-216-809-11	MET AL CHIP	100	5%	1/16W
R556	1-216-853-11	MET AL CHIP	470K	5%	1/16W
R601	1-216-813-11	MET AL CHIP	220	5%	1/16W
R602	1-216-833-11	MET AL CHIP	10K	5%	1/16W
R801	1-216-845-11	MET AL CHIP	100K	5%	1/16W
R802	1-216-845-11	MET AL CHIP	100K	5%	1/16W
R803	1-216-853-11	MET AL CHIP	470K	5%	1/16W
R804	1-216-853-11	MET AL CHIP	470K	5%	1/16W
R808	1-216-825-11	MET AL CHIP	2.2K	5%	1/16W
R810	1-216-827-11	MET AL CHIP	3.3K	5%	1/16W
R811	1-216-827-11	MET AL CHIP	3.3K	5%	1/16W
R812	1-216-841-11	MET AL CHIP	47K	5%	1/16W
R814	1-216-825-11	MET AL CHIP	2.2K	5%	1/16W
R815	1-216-829-11	MET AL CHIP	4.7K	5%	1/16W
R816	1-216-831-11	MET AL CHIP	6.8K	5%	1/16W
R817	1-216-835-11	MET AL CHIP	15K	5%	1/16W

MAIN

Ref. No.	Part No.	Description			Remark
R818	1-216-839-11	METAL CHIP	33K	5%	1/16W
R819	1-216-853-11	METAL CHIP	470K	5%	1/16W
R820	1-216-845-11	METAL CHIP	100K	5%	1/16W
R821	1-216-857-11	METAL CHIP	1M	5%	1/16W
R831	1-216-864-11	METAL CHIP	0	5%	1/16W
R832	1-216-864-11	METAL CHIP	0	5%	1/16W
R841	1-216-809-11	METAL CHIP	100	5%	1/16W
R842	1-216-809-11	METAL CHIP	100	5%	1/16W
R901	1-216-845-11	METAL CHIP	100K	5%	1/16W
R902	1-216-853-11	METAL CHIP	470K	5%	1/16W
R903	1-216-863-11	RES,CHIP	3.3M	5%	1/16W
R904	1-216-845-11	METAL CHIP	100K	5%	1/16W
R906	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R909	1-216-847-11	METAL CHIP	150K	5%	1/16W
R910	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R915	1-216-809-11	METAL CHIP	100	5%	1/16W
R916	1-216-833-11	METAL CHIP	10K	5%	1/16W
R917	1-216-845-11	METAL CHIP	100K	5%	1/16W
R918	1-216-821-11	METAL CHIP	1K	5%	1/16W
R919	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R920	1-217-671-11	METAL CHIP	1	5%	1/10W
R921	1-217-671-11	METAL CHIP	1	5%	1/10W
R922	1-216-849-11	METAL CHIP	220K	5%	1/16W
R923	1-218-915-11	RES,CHIP	680K	0.50%	1/16W
R924	1-216-845-11	METAL CHIP	100K	5%	1/16W
R925	1-216-851-11	METAL CHIP	330K	5%	1/16W
R926	1-218-899-11	RES,CHIP	150K	0.50%	1/16W
R927	1-218-899-11	RES,CHIP	150K	0.50%	1/16W
R928	1-218-891-11	RES,CHIP	68K	0.50%	1/16W
R929	1-218-903-11	RES,CHIP	220K	0.50%	1/16W
R930	1-216-864-11	METAL CHIP	0	5%	1/16W
R931	1-216-821-11	METAL CHIP	1K	5%	1/16W
R933	1-216-845-11	METAL CHIP	100K	5%	1/16W
R934	1-218-915-11	RES,CHIP	680K	0.50%	1/16W
R936	1-216-845-11	METAL CHIP	100K	5%	1/16W
R937	1-216-841-11	METAL CHIP	47K	5%	1/16W
R938	1-216-847-11	METAL CHIP	150K	5%	1/16W
R939	1-216-843-11	METAL CHIP	68K	5%	1/16W
R940	1-216-845-11	METAL CHIP	100K	5%	1/16W
R942	1-216-864-11	METAL CHIP	0	5%	1/16W
		<NETWORK RESISTOR>			
RB551	1-233-961-11	RES, NETWORK (CHIP TYPE) 1K			
RB552	1-233-979-11	RES, NETWORK (CHIP TYPE) 1M			
RB801	1-233-977-11	RES, NETWORK (CHIP TYPE) 470K			
		<SWITCH>			
S301	1-762-079-11	SWITCH, SLIDE (DIGITAL MEGA BASS)			
S801	1-771-326-11	SWITCH, PUSH LEVER (1 KEY) (DOOR OPEN/CLOSE)			
S802	1-762-078-11	SWITCH, SLIDE (HOLD)			
S803	1-762-078-11	SWITCH, SLIDE (A VLS)			
S804	1-771-053-21	SWITCH, KEY BOARD (■ STOP/CHARGE)			
S805	1-771-053-21	SWITCH, KEY BOARD (►►I)			
S806	1-771-053-21	SWITCH, KEY BOARD (I◄◄)			
S807	1-771-053-21	SWITCH, KEY BOARD (VOLUME+)			
S808	1-771-053-21	SWITCH, KEY BOARD (VOLUME-)			
S902	1-771-483-21	SWITCH, PUSH (1 KEY) (BATTERY IN DET)			
		<THERMISTOR (POSITIVE)>			
THP901	1-771-075-21	THERMISTOR, POSITIVE			
		<VIBRATOR>			
X601	1-767-621-11	VIBRATOR, CERAMIC (16.9344MHz)			
**********					
		MISCELLANEOUS			
		**********			
⚠104	X-4949-164-1	SERVICE ASSY, OP			
106	1-670-707-11	CLEAR FLEXIBLE BOARD			
M901	8-835-594-01	MOTOR, DC SSM-01C03A/J-S (SPINDLE)			
M902	1-698-764-21	MOTOR, SLED (INCLUDING GEAR)			
R1001	1-216-789-11	METAL CHIP	2.2	5%	1/16W
**********					
		ACCESSORIES & PACKING MATERIALS			
		**********			
⚠	1-418-049-11	ADAPTOR, AC (AC-MZR55) (HK)			
	1-475-831-62	REMOTE CONTROL UNIT (RM-MZE33)			
	1-528-947-11	BATTERY PACK (NH-MD AA) (HK)			
	3-864-830-11	MANUAL, INSTRUCTION (SPANISH,CHINESE) (AEP,E)			
	3-864-830-21	MANUAL, INSTRUCTION (ENGLISH,FRENCH) (US,CND)			
	3-864-830-31	MANUAL, INSTRUCTION (GERMAN,DUTCH) (AEP)			
	3-864-830-41	MANUAL, INSTRUCTION (ITALIAN, PORTUGUESE) (AEP)			
	3-864-830-51	MANUAL, INSTRUCTION (SWEDISH,FINNISH) (AEP)			
	3-864-830-61	MANUAL, INSTRUCTION (ENGLISH,CHINESE) (AEP,HK)			
	3-864-830-71	MANUAL, INSTRUCTION (FRENCH,RUSSIAN) (AEP)			
	4-972-888-01	CASE, CARRYING			
	8-953-218-90	HEADPHONE MDR-E838SP/IK SET (HK)			
	8-953-278-90	HEADPHONE MDR-A34SP SET (US)			
	8-953-304-90	RECEIVER MDR-E805SP SET (CND,AEP,E)			

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

99A0478-1
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